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# HVAC

## TESTING, ADJUSTING & BALANCING REPORT

*For*  
*STG Building-Turbine (1)*

### South Helwan Supercritical Power Plant

Helwan City

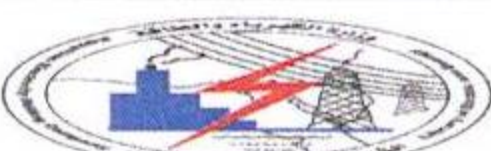
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|                                                                                                               |              |                                                               |               |                                                                                     |
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## 1. DOCUMENT REVIEW AND APPROVAL

### Author(s)

| Name                 | Title | Company | Date       | Signature                                                                           |
|----------------------|-------|---------|------------|-------------------------------------------------------------------------------------|
| Nourhane Alaa ElDien | T.O.E | TAG     | 10/03/2018 |  |

### Tester(s)

| Name        | Title | Company | Date       | Signature                                                                             |
|-------------|-------|---------|------------|---------------------------------------------------------------------------------------|
| Marwan Samy | P.E   | TAG     | 12/03/2018 |   |
|             |       |         | 13/03/2018 |  |
|             |       |         | 22/04/2018 |  |

### Reviewer(s)

| Name            | Title | Company | Date       | Signature                                                                             |
|-----------------|-------|---------|------------|---------------------------------------------------------------------------------------|
| Al-Hassan Ahmed | S.H   | TAG     | 16/03/2018 |  |
|                 |       |         | 26/04/2018 |  |

### South Helwan Super Critical Power Plant Reviewer(s)

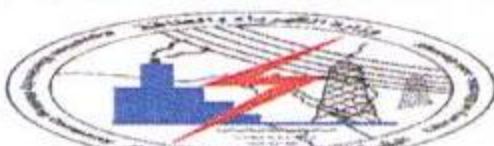
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|      |       |         |      |           |

### Approver(s)

| Name | Title | Company | Date | Signature |
|------|-------|---------|------|-----------|
|      |       |         |      |           |
|      |       |         |      |           |
|      |       |         |      |           |





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## 2. INTRODUCTION

TAG will follow in executing testing and balancing procedures, the regulations and instructions of (NEBB) National Environmental Balancing Bureau.

The balancing procedure consists of imposing resistance in the system by using dampers or valves to achieve the design objectives. The procedure can be significantly improved with balancing devices that are properly selected and located to match the requirements of the air or the hydraulic distribution system and also with using high quality instrumentation and skilled measurement techniques.

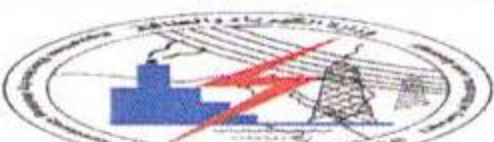
Testing and balancing will be performed in the field not in the laboratory. Therefore, it is not always possible to use the best and most accurate measuring techniques available, but TAG will exploit every means that field conditions permit to get the most accurate measurement results. So this method statement will be the base of all TAB works; which will carry out along this project.

## 3. REFERENCES AND CODES

The data presented in this report is record of system measurements and final adjustments that have been obtained in accordance with the current edition of the NEBB procedural standards for testing adjusting, and balancing of environmental systems. Any variances from design quantities which exceed NEBB tolerances, are noted in the test – adjust – balance report project summary.





|                                                                                                               |                                                  |                     |                                                                                     |               |
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#### 4. PURPOSE OF TAB

- Test to verify proper and safe operation, determine actual point of performance, evaluate qualitative and quantitative performance of equipment, systems and controls at design, average and low loads using actual or simulated loads.
- Adjust and regulate equipment and systems so as to meet specified performance requirements and to achieve specified interaction with other related systems under normal and emergency loads and operating conditions.
- Balance systems and equipment to regulate flow rates to match load requirements over full operating ranges.

#### 5. PRE-TAB REVIEW

- Review contract documents before project construction is started and confirm in writing to Owner's Representative adequacy of provisions for TAB and other aspects of design and installation pertinent to success of TAB.
- Review specified standards and report to Owner's Representative in writing all proposed procedures which vary from standard.
- During construction, co-ordinate location and installation of TAB devices, equipment, accessories, measurement ports and fittings.

#### 6. INSTRUMENTS

- 6.1. Prior to TAB, submit to Owner's Representative list of instruments to be used together with serial numbers.
- 6.2. Calibrate in accordance with requirements of most stringent of referenced standard for either applicable system or HVAC system.
- 6.3. Calibrate within 3 months of TAB. Provide certificate of calibration to Owner's Representative.

#### 7. SETTINGS

- 7.1. After TAB is completed to satisfaction of Owner's Representative, replace drive guards, close access doors, lock devices in set positions and ensure sensors are at required settings.
- 7.2. Permanently mark settings to allow restoration at any time during life of facility. Markings not to be eradicated or covered in any way.





|                                                                                                                      |                                                               |                            |                                                                                     |
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## 8. SCOPE OF WORK

### 8.1. Starting up all HVAC systems, according to the following conditions:

1. Proper lubrication of rotating or sliding parts is verified.
2. Motors, fans, and all HVAC equipment have the correct rotation.
3. The motor amperes, volts, and rpm, are compared with nameplate data and are adjusted within a motor-rated hp or amperes

### 8.2. Coordinate with control contractor, control performance will be checked for proper work as per project control strategy.

### 8.3. Hand Over the system to consultant.

### 8.4. Submit final Testing, Adjusting and Balancing report including all measurements carried and all adjusting position of balancing devices.





## 9. SYSTEM BRIEF DESCRIPTION

The equipment in the aim of this Report are SAFs, Ex.AF which installed to serve the following areas in **South Helwan Supercritical Power Plant's** Turbine (1) Building :

| Item | Fan                      | Area         |
|------|--------------------------|--------------|
| 1    | SAF-01 (SAF-S-GF-01)     | Ground Floor |
| 2    | SAF-02 (SAF-S-GF-02)     |              |
| 3    | SAF-03 (SAF-S-GF-03)     |              |
| 4    | SAF-04 (SAF-S-GF-04)     |              |
| 5    | SAF-05 (SAF-S-GF-05)     |              |
| 6    | SAF-06 (SAF-S-GF-06)     |              |
| 7    | SAF-07 (SAF-S-GF-07)     |              |
| 8    | SAF-08 (SAF-S-GF-08)     |              |
| 9    | Ex.AF-01 (Ex.AF-S-GF-01) |              |
| 10   | Ex.AF-02 (Ex.AF-S-GF-02) |              |
| 11   | Ex.AF-03 (Ex.AF-S-GF-03) |              |
| 12   | Ex.AF-04 (Ex.AF-S-GF-04) |              |
| 13   | Ex.AF-05 (Ex.AF-S-GF-05) |              |
| 14   | Ex.AF-06 (Ex.AF-S-GF-06) |              |
| 15   | Ex.AF-07 (Ex.AF-S-GF-07) |              |
| 16   | Ex.AF-08 (Ex.AF-S-GF-08) |              |

Note: SAF : Supply Air Fan.

Ex.AF : Exhaust Air Fan.







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| Item | Fan                      | Area            |
|------|--------------------------|-----------------|
| 1    | SAF-01 (SAF-S-MF-01)     | Mezzanine Floor |
| 2    | SAF-02 (SAF-S- MF-02)    |                 |
| 3    | SAF-03 (SAF-S-MF-03)     |                 |
| 4    | SAF-04 (SAF-S-MF-04)     |                 |
| 5    | SAF-05 (SAF-S-MF-05)     |                 |
| 6    | SAF-06 (SAF-S-MF-06)     |                 |
| 7    | SAF-07 (SAF-S-MF-07)     |                 |
| 8    | Ex.AF-01 (Ex.AF-S-MF-01) |                 |
| 9    | Ex.AF-02 (Ex.AF-S-MF-02) |                 |
| 10   | Ex.AF-03 (Ex.AF-S-MF-03) |                 |
| 11   | Ex.AF-04 (Ex.AF-S-MF-04) |                 |
| 12   | Ex.AF-05 (Ex.AF-S-MF-05) |                 |
| 13   | Ex.AF-06 (Ex.AF-S-MF-06) |                 |
| 14   | Ex.AF-07 (Ex.AF-S-MF-07) |                 |

Note: SAF : Supply Air Fan.

Ex.AF : Exhaust Air Fan.







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| Item | Fan                      | Area            |
|------|--------------------------|-----------------|
| 1    | SAF-01 (SAF-S-OP-01)     | Operation Floor |
| 2    | SAF-02 (SAF-S-OP-02)     |                 |
| 3    | SAF-03 (SAF-S-OP-03)     |                 |
| 4    | SAF-04 (SAF-S-OP-04)     |                 |
| 5    | SAF-05 (SAF-S-OP-05)     |                 |
| 6    | SAF-06 (SAF-S-OP-06)     |                 |
| 7    | SAF-07 (SAF-S-OP-07)     |                 |
| 8    | SAF-08 (SAF-S-OP-08)     |                 |
| 9    | SAF-08 (SAF-S-OP-09)     |                 |
| 10   | SAF-08 (SAF-S-OP-10)     |                 |
| 11   | Ex.AF-01 (Ex.AF-S-OP-01) |                 |
| 12   | Ex.AF-02 (Ex.AF-S-OP-02) |                 |
| 13   | Ex.AF-03 (Ex.AF-S-OP-03) |                 |
| 14   | Ex.AF-04 (Ex.AF-S-OP-04) |                 |
| 15   | Ex.AF-05 (Ex.AF-S-OP-05) |                 |
| 16   | Ex.AF-06 (Ex.AF-S-OP-06) |                 |
| 17   | Ex.AF-07 (Ex.AF-S-OP-07) |                 |
| 18   | Ex.AF-08 (Ex.AF-S-OP-08) |                 |
| 19   | Ex.AF-09 (Ex.AF-S-OP-09) |                 |
| 20   | Ex.AF-10 (Ex.AF-S-OP-10) |                 |

Note: SAF : Supply Air Fan.

Ex.AF : Exhaust Air Fan.





|                                                                                                               |              |                                                  |               |                                                                                     |
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## 10. PRE-REQUISITES VERIFICATION

### 10.1. Purpose

Verify that the required pre-requisites have been satisfied.

### 10.2. TestProcedure

Verify that:

- ☞ Equipment and its reference documentation is available for verifications
- ☞ Equipment Installation has been completed



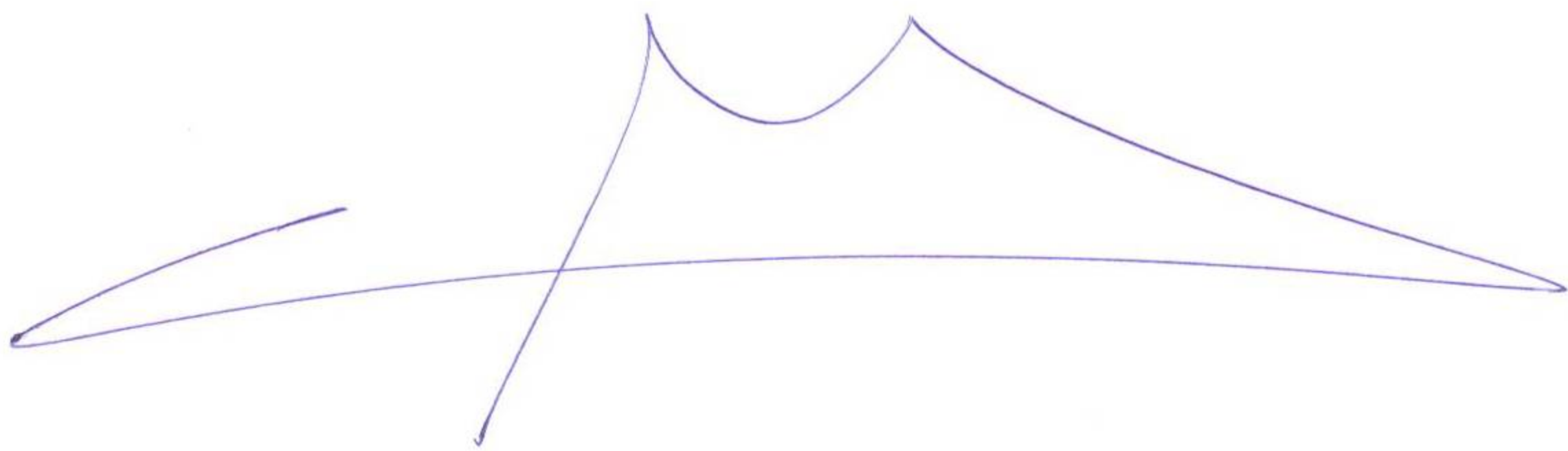


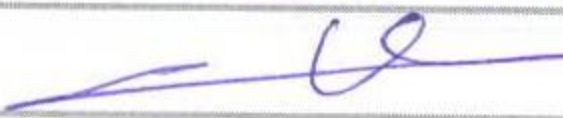
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**10.3. Data Sheet(s)**  
**Data sheet number 10.3.1.**

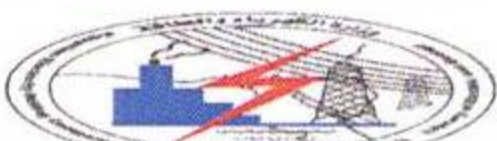
| Pre-requisite                                                            | Result<br>YES / NO / NA | Signature | Date       |
|--------------------------------------------------------------------------|-------------------------|-----------|------------|
| Equipment and its reference documentation is available for verifications | YES                     |           | 10/03/2018 |
| Equipment Installation has been completed                                | YES                     |           | 10/03/2018 |

**NOTES:**




|           |                                                                                     |                                                                                       |
|-----------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|           | <b>Tested By</b>                                                                    | <b>Reviewed By</b>                                                                    |
| Name      | Marwan Samy                                                                         | Al-Hassan Ahmed                                                                       |
| Signature |  |  |
| Date      | 10/03/2018                                                                          | 12/3/2018                                                                             |



|                                                                                                               |                                                  |                     |                                                                                     |                |
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## 11. Pre-functional performance checklists

Designate Contractor team members to participate in the Pre- Functional Performance Test Checklists and the Functional Performance Tests specified herein. In addition, the Government team members, the Design Agent's Representative, and the Using Agency's Representative. The team members shall be as follows:

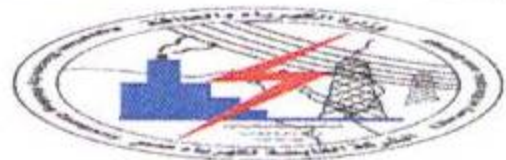
| Commissioning Team                     |             |
|----------------------------------------|-------------|
| Representative                         | Designation |
| Contractor's Mechanical representative | M           |
| Contractor's Electrical representative | E           |
| Contractor's Control representative    | C           |
| Contractor's TAB representative        | T           |

Appendices A and B shall be completed by the commissioning team. Acceptance by each commissioning team member of each Pre- Functional Performance Test Checklist item shall be indicated by initials and date unless an ☐ indicating that participation by that individual is not required. Acceptance by each commissioning team member of each functional performance test item shall be indicated by signature and date.

Note: TAB: Testing, Adjusting & Balancing.







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**GROUND FLOOR****Data Sheet No.: 11.1 Supply Air Fan Unit Checklist**

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 01 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

**NOTES:**

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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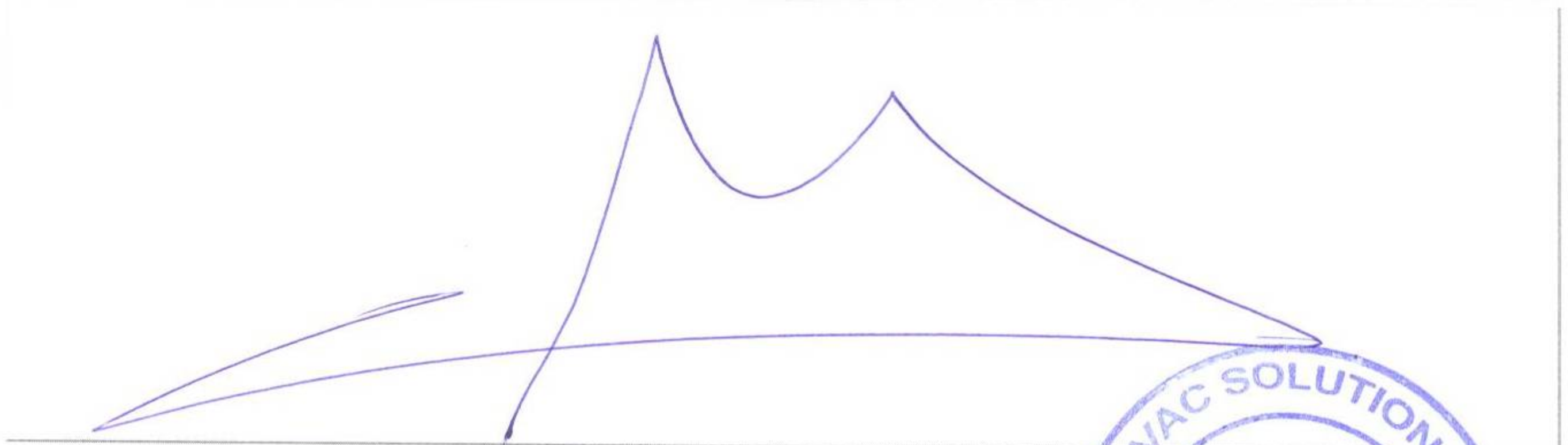
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## Data Sheet No.: 11.2 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 02 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.3 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 03 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature          | Date       |
|------------------------------------------------|-------------|--------------------|------------|
| Contractor's Mechanical representative         | M           |                    | 10/03/2018 |
| Contractor's Electrical representative         | E           |                    | 10/03/2018 |
| Contractor's Control representative            | C           |                    | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Signature]</i> | 10/03/2018 |





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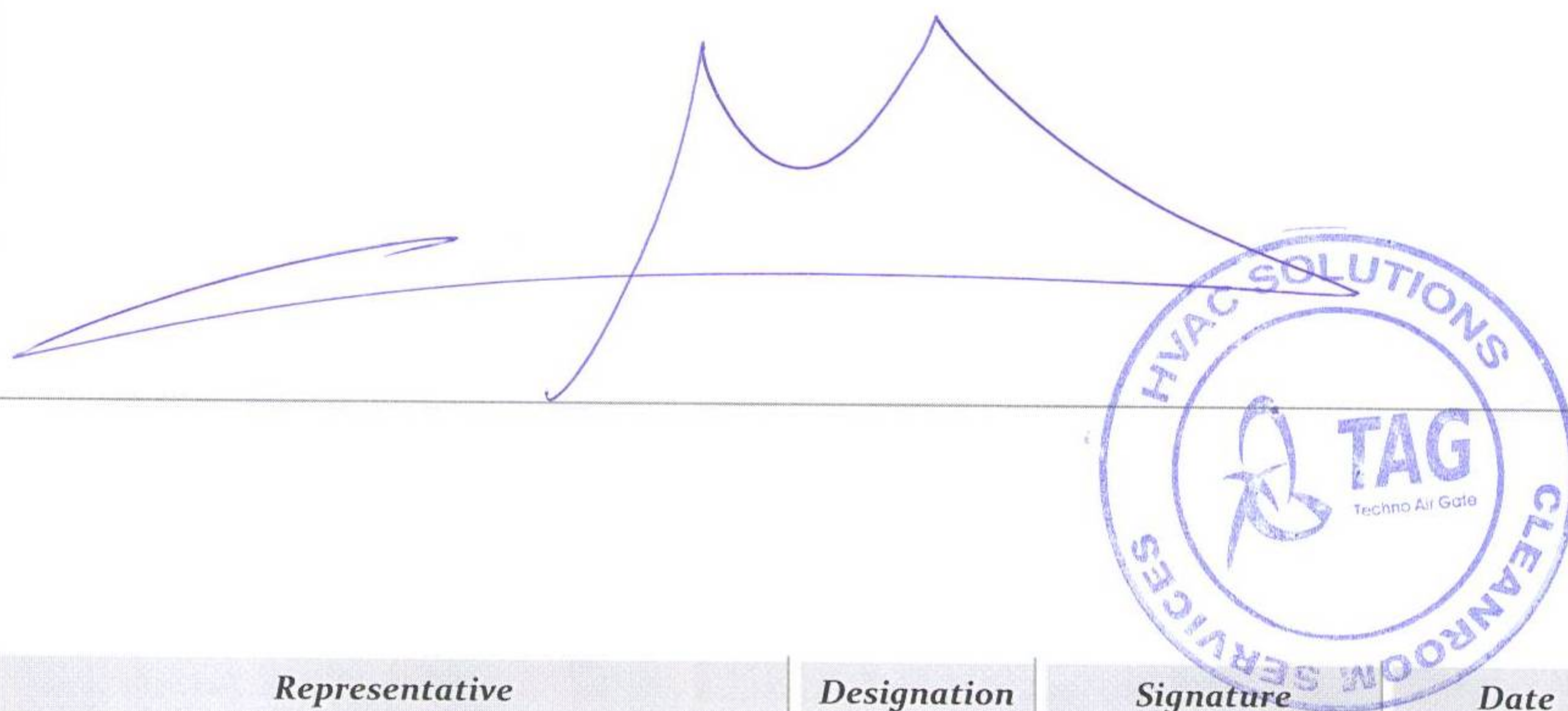
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## Data Sheet No.: 11.4 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 04 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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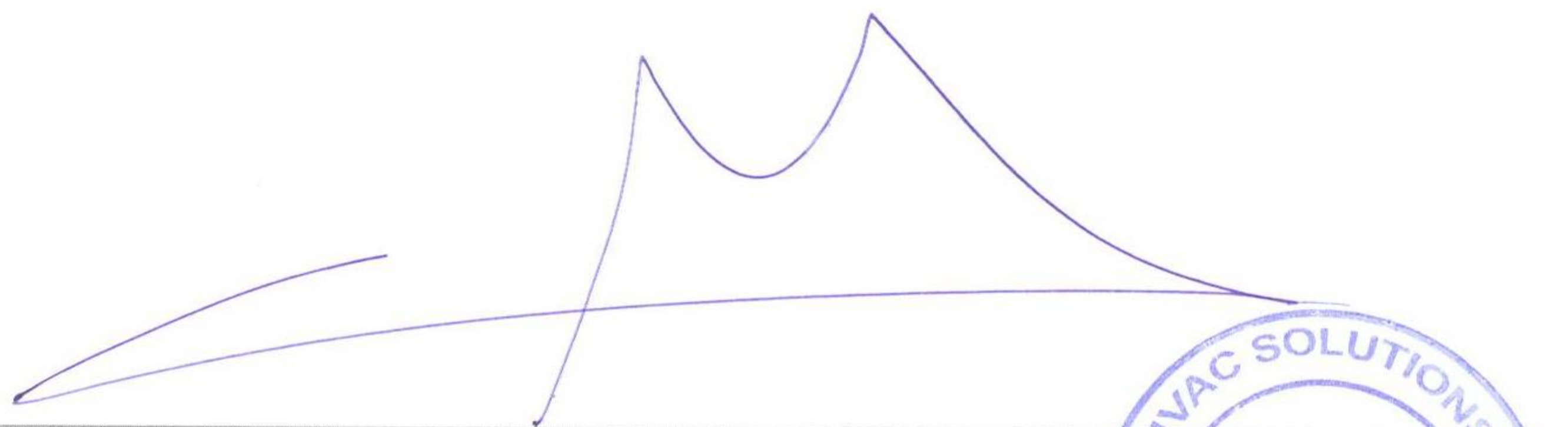
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## Data Sheet No.: 11.5 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 05 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.6 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 06 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.7 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 07 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.8 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF o8 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.9 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 01 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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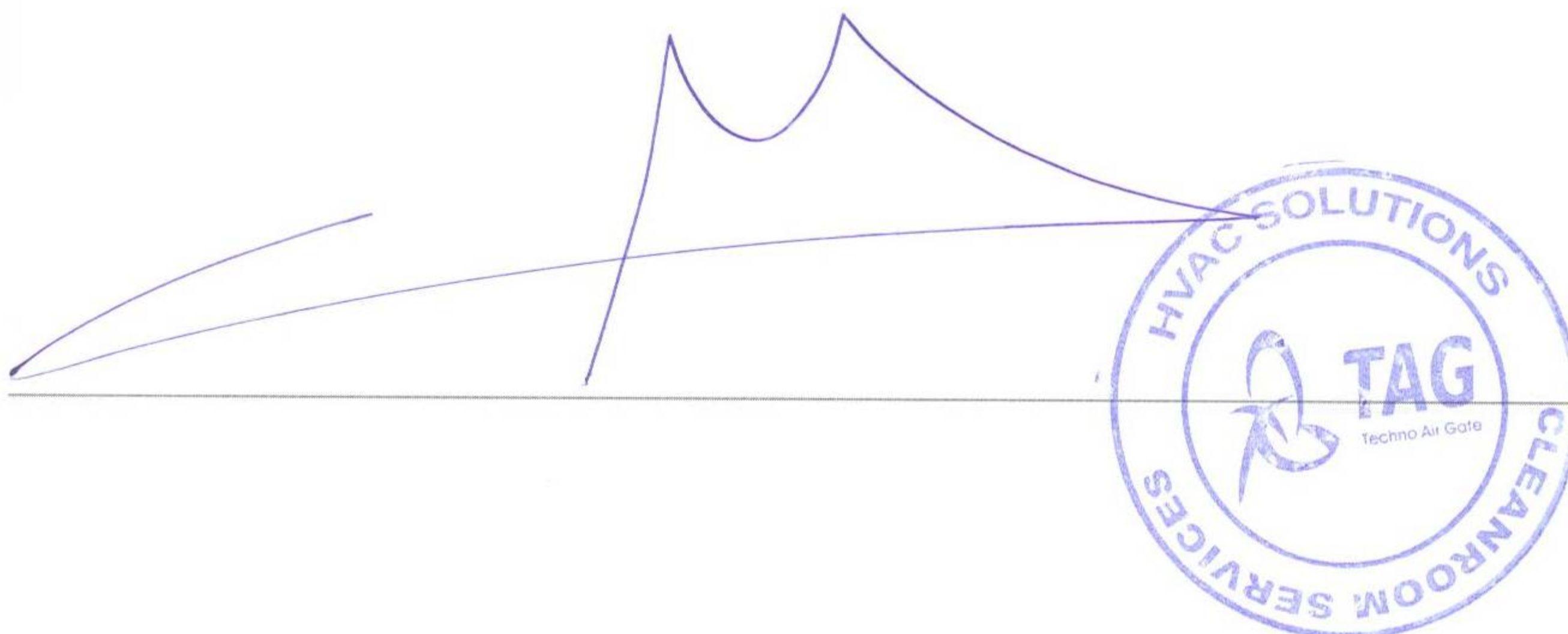
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## Data Sheet No.: 11.10 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 02 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |



|                                                                                                                      |              |                                                               |               |                                                                                     |  |
|----------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|--|
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**Data Sheet No.: 11.11 Exhaust Air Fan Unit Checklist**

| Supply Air Fan Unit Checklist                    |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 03 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

**NOTES:**

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.12 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 04 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*

*[Circular stamp: HVAC SOLUTIONS, TAG Techno Air Gate, CLEANROOM SERVICES]*

| Representative                                 | Designation | Signature          | Date       |
|------------------------------------------------|-------------|--------------------|------------|
| Contractor's Mechanical representative         | M           |                    | 10/03/2018 |
| Contractor's Electrical representative         | E           |                    | 10/03/2018 |
| Contractor's Control representative            | C           |                    | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.13 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 05 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.14 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 06 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.15 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 07 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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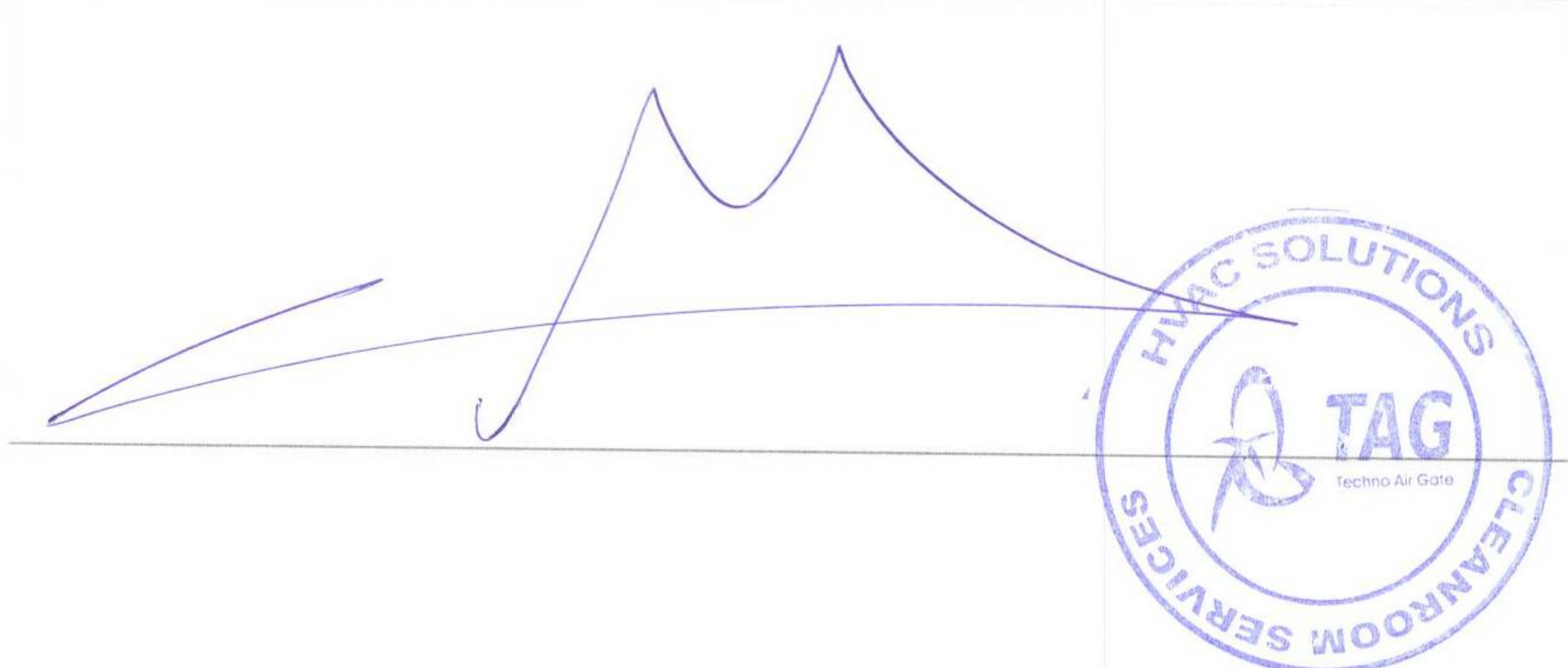
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## Data Sheet No.: 11.16 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF o8 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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**MEZZANINE FLOOR****Data Sheet No.: 11.17 Supply Air Fan Unit Checklist**

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 01 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

**NOTES:**

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.18 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 02 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

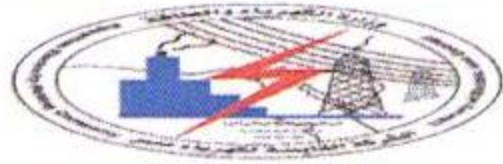
## NOTES:

*[Handwritten signature]*

*[Circular stamp: HVAC SOLUTIONS, TAG Techno Air Gate, CLEANROOM SERVICES]*

| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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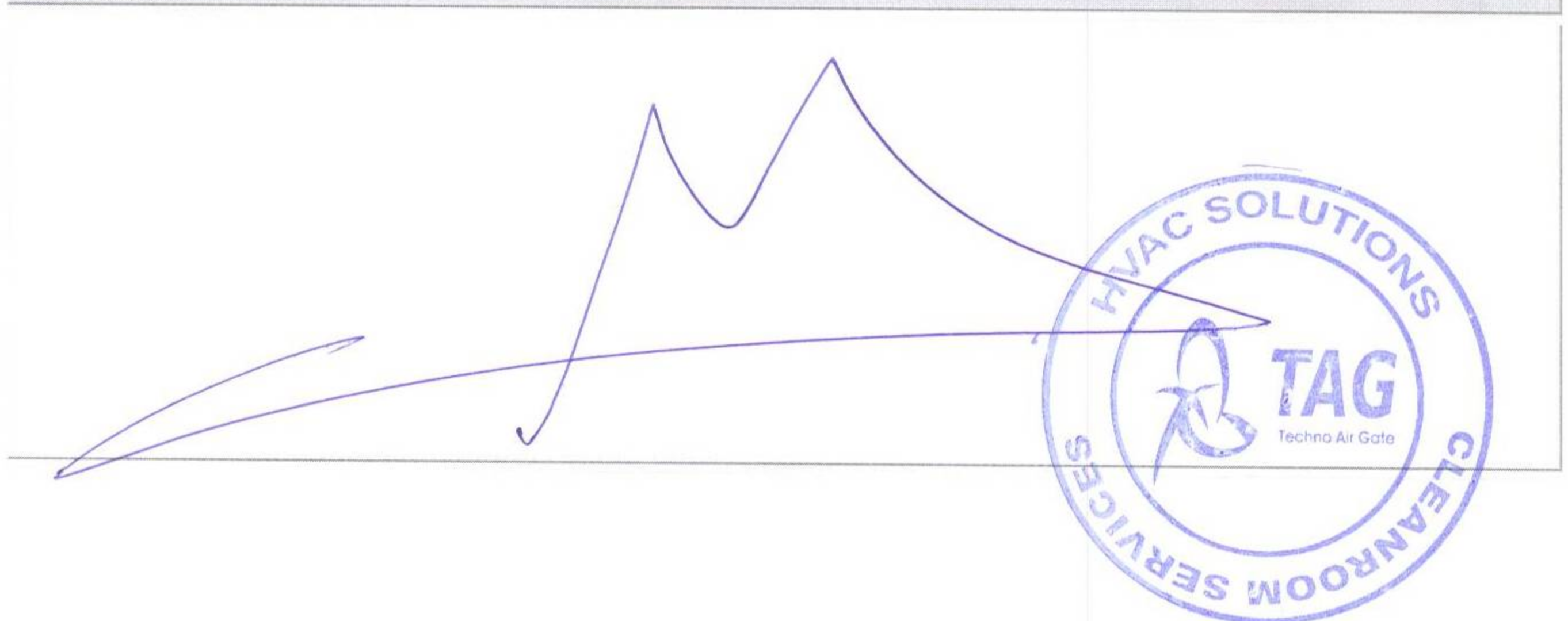
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## Data Sheet No.: 11.19 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 03 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature                                                                             | Date       |
|------------------------------------------------|-------------|---------------------------------------------------------------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                                                                       | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                                                                       | 10/03/2018 |
| Contractor's Control representative            | C           |                                                                                       | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |  | 10/03/2018 |





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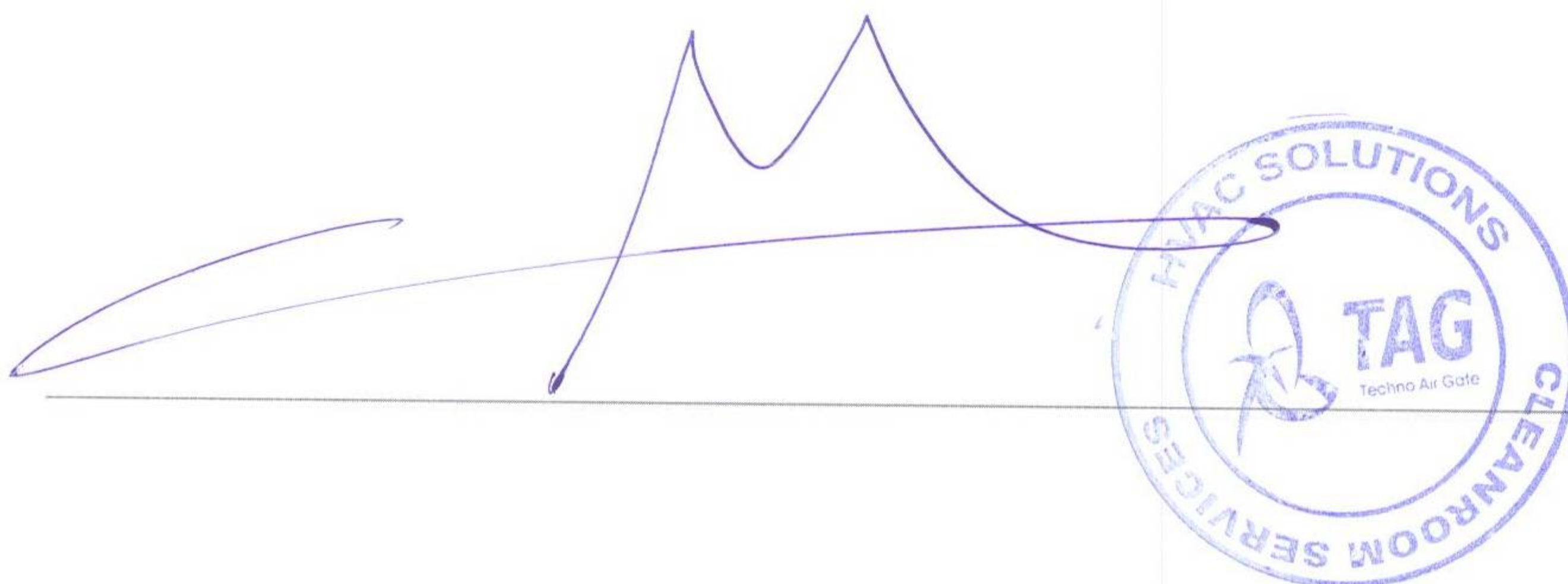
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## Data Sheet No.: 11.20 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 04 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature                                                                             | Date       |
|------------------------------------------------|-------------|---------------------------------------------------------------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                                                                       | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                                                                       | 10/03/2018 |
| Contractor's Control representative            | C           |                                                                                       | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |  | 10/03/2018 |





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## Data Sheet No.: 11.21 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 05 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.22 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF o6 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.23 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 07 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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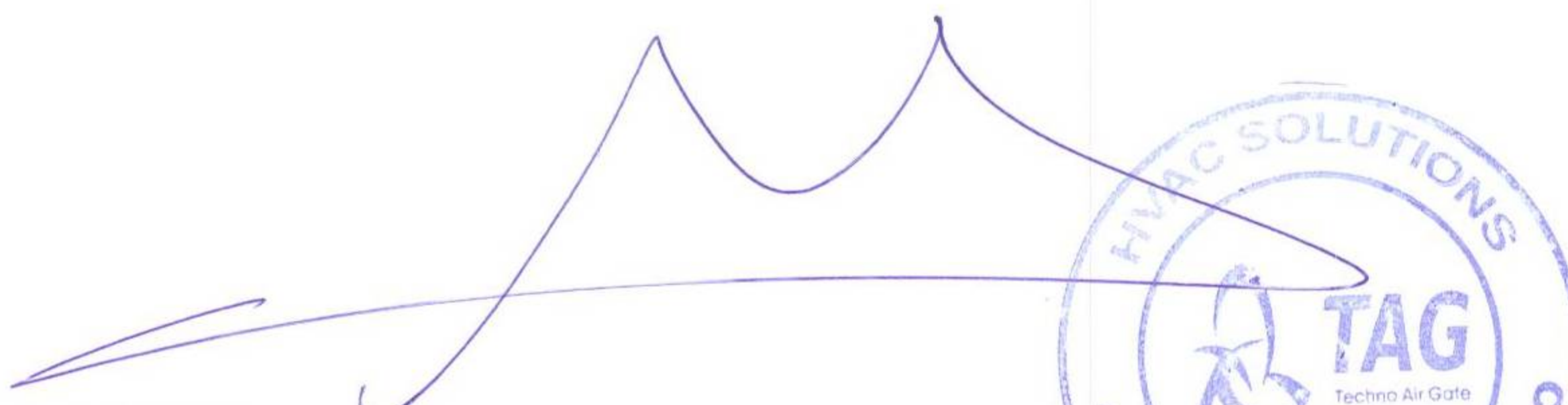
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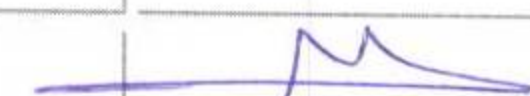
## Data Sheet No.: 11.24 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 01 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:





| Representative                                 | Designation | Signature                                                                             | Date       |
|------------------------------------------------|-------------|---------------------------------------------------------------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                                                                       | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                                                                       | 10/03/2018 |
| Contractor's Control representative            | C           |                                                                                       | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |  | 10/03/2018 |





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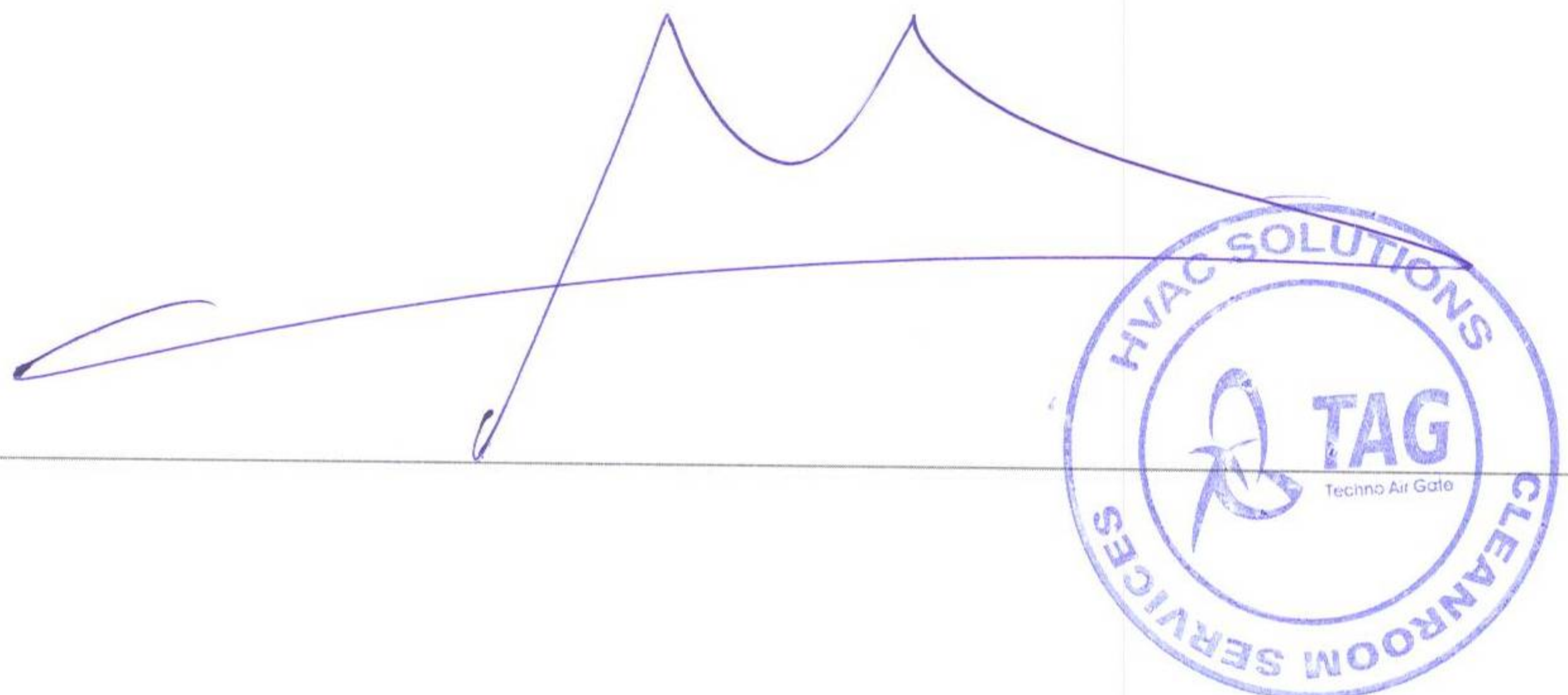
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## Data Sheet No.: 11.25 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 02 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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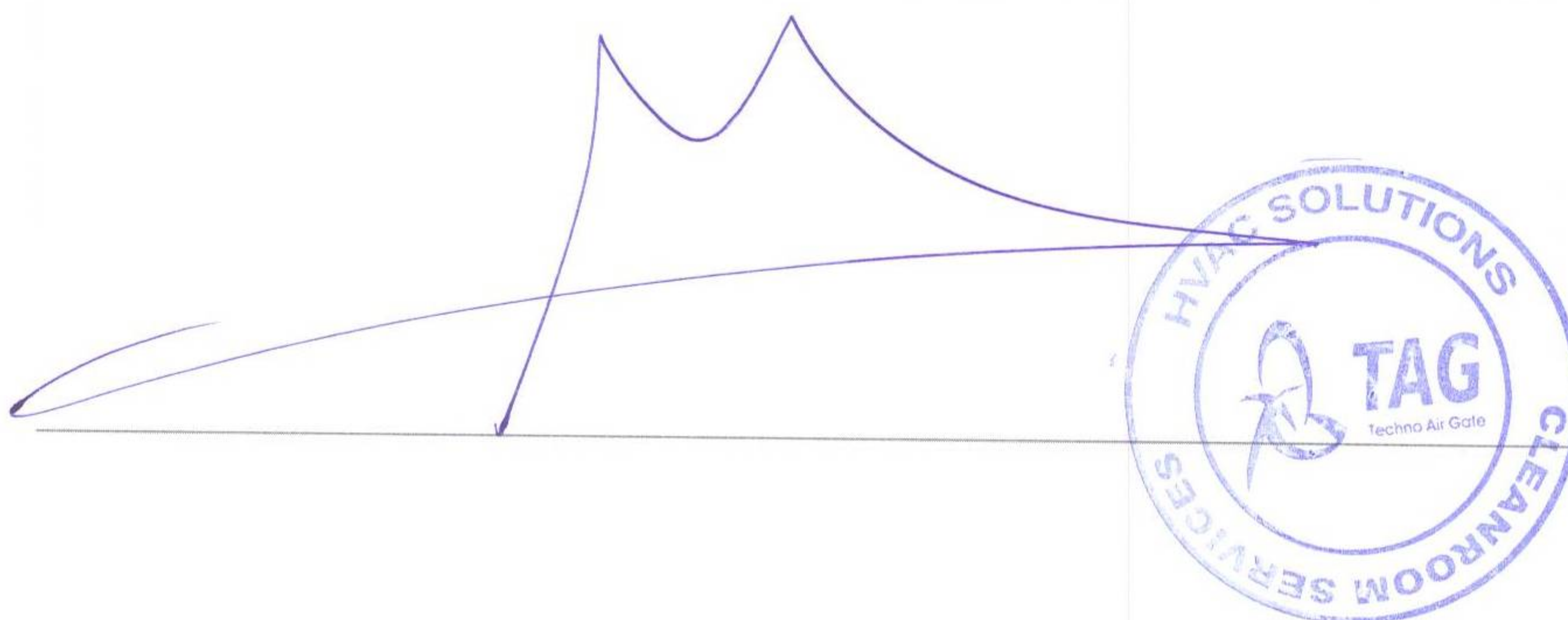
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## Data Sheet No.: 11.26 Exhaust Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 03 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.27 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 04 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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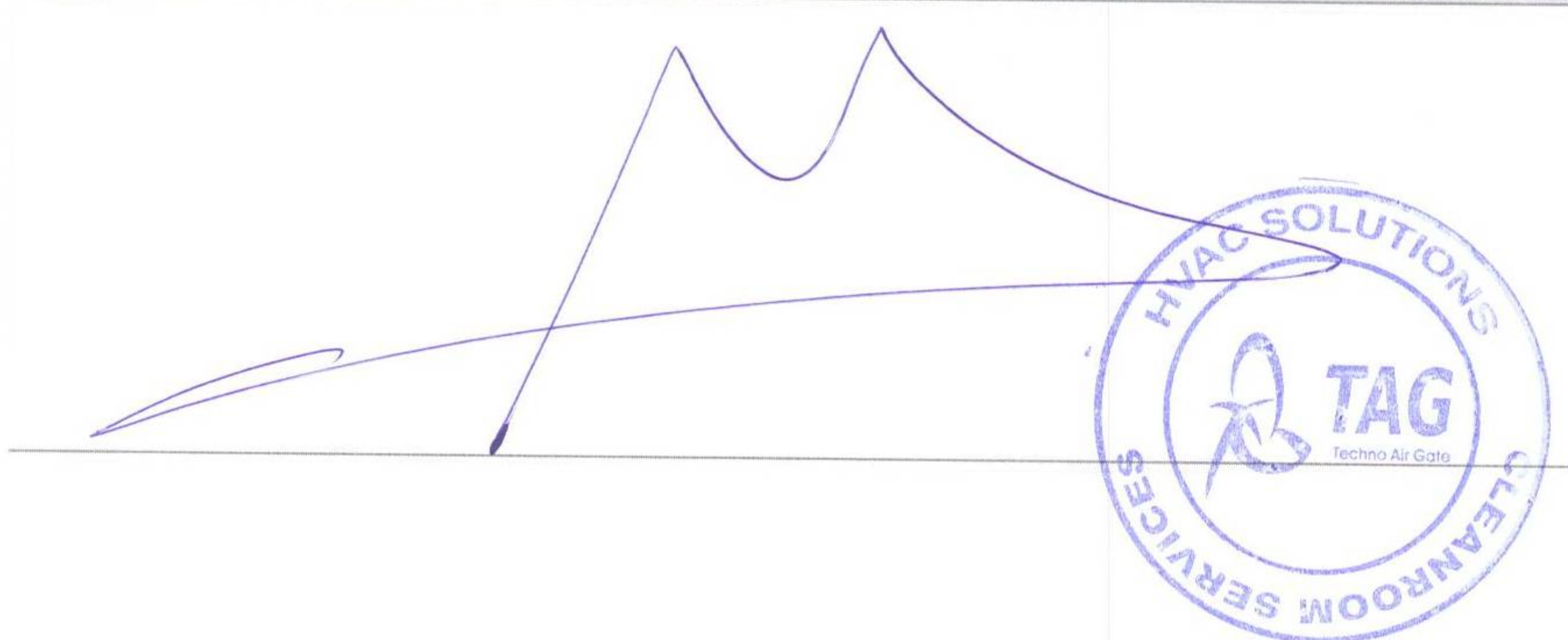
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## Data Sheet No.: 11.28 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 05 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.29 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF o6 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*

*[Circular stamp: HVAC SOLUTIONS, TAG Techno Air Gate, CLEANROOM SERVICES]*

| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.30 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 07 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature          | Date       |
|------------------------------------------------|-------------|--------------------|------------|
| Contractor's Mechanical representative         | M           |                    | 10/03/2018 |
| Contractor's Electrical representative         | E           |                    | 10/03/2018 |
| Contractor's Control representative            | C           |                    | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Signature]</i> | 10/03/2018 |





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**OPERATION FLOOR****Data Sheet No.: 11.31 Supply Air Fan Unit Checklist**

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 01 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

**NOTES:**

*[Handwritten signature]*

*[Circular stamp: HVAC SOLUTIONS, TAG Techno Air Gate, CLEANROOM SERVICES]*

| Representative                                 | Designation | Signature          | Date       |
|------------------------------------------------|-------------|--------------------|------------|
| Contractor's Mechanical representative         | M           |                    | 10/03/2018 |
| Contractor's Electrical representative         | E           |                    | 10/03/2018 |
| Contractor's Control representative            | C           |                    | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Signature]</i> | 10/03/2018 |





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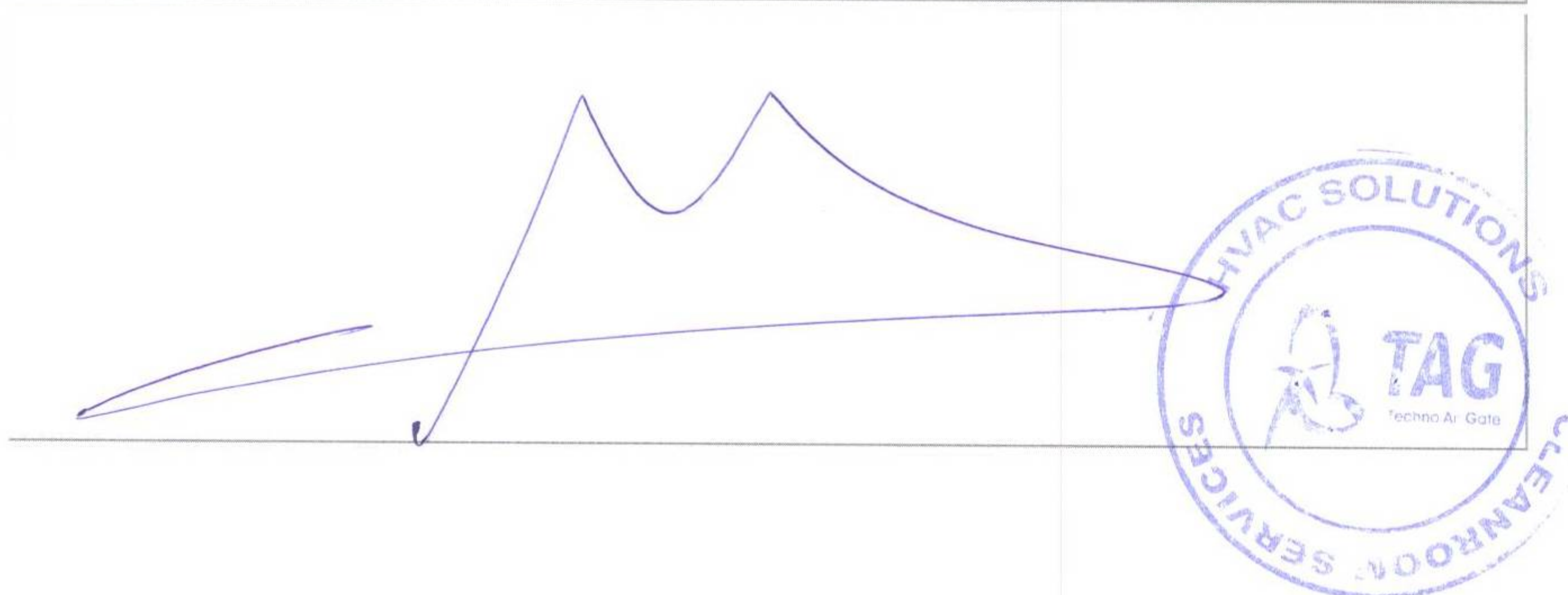
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## Data Sheet No.: 11.32 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 02 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.33 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 03 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*

*[Circular stamp: HVAC SOLUTIONS, TAG Techno Air Gate, CLEANROOM SERVICES]*

| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.34 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 04 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.35 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 05 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |





STG Building-Turbine (1)

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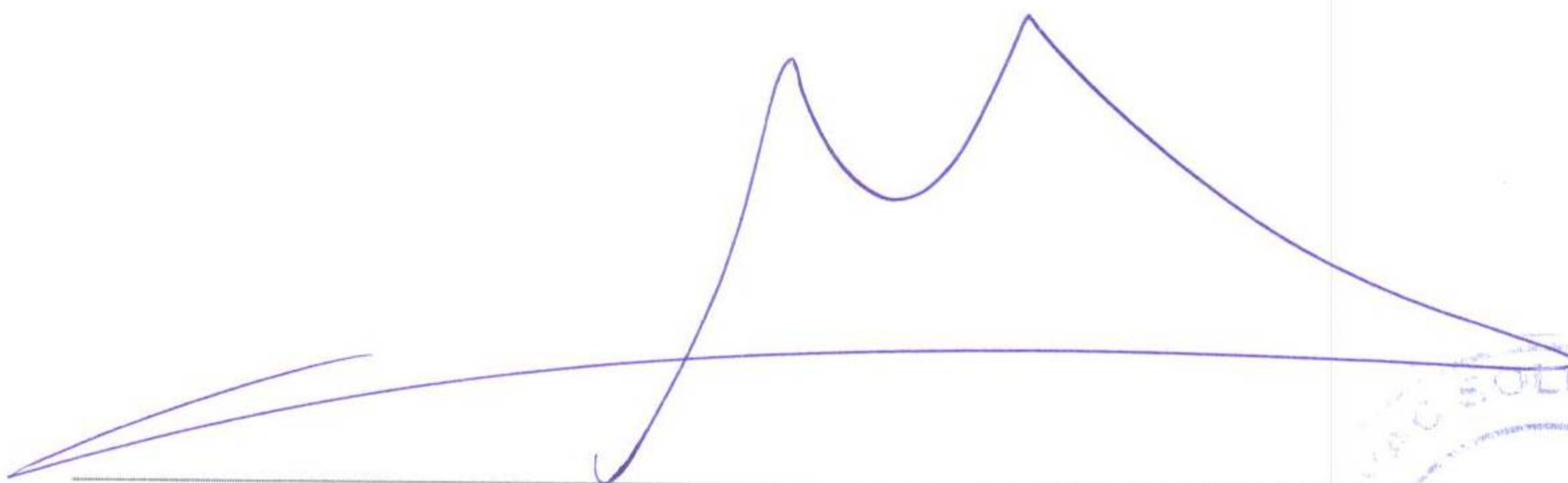
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## Data Sheet No.: 11.36 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF o6 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





STG Building-Turbine (1)

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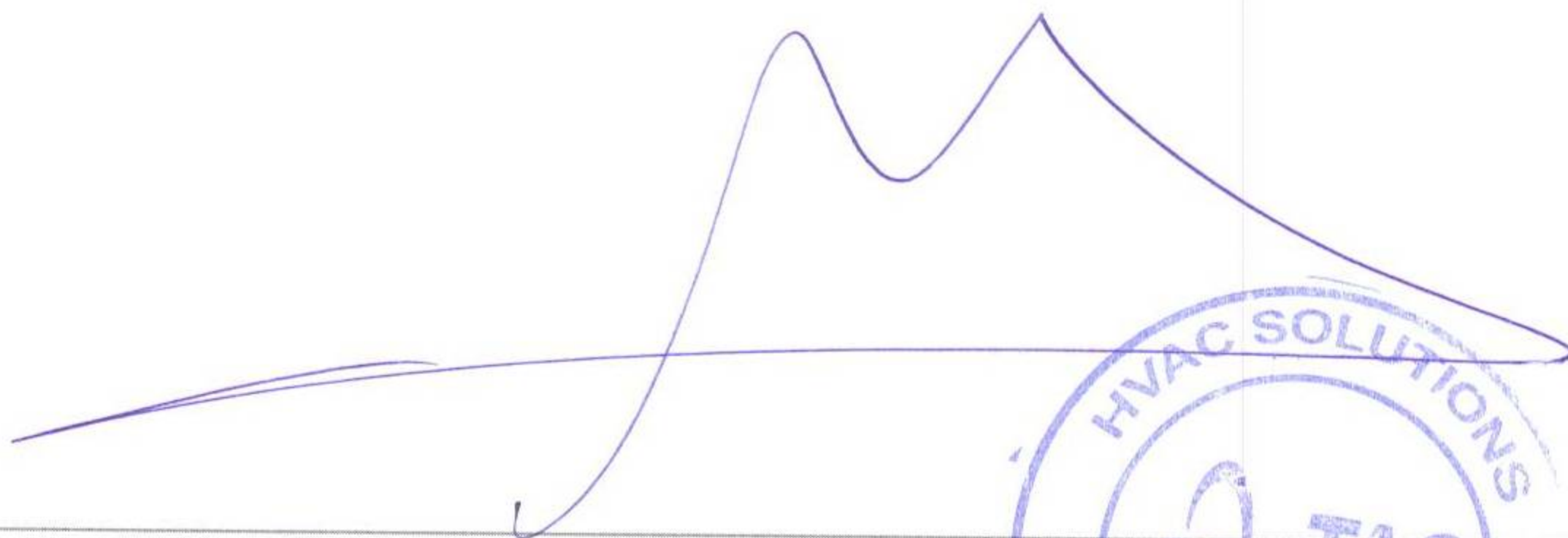
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## Data Sheet No.: 11.37 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 07 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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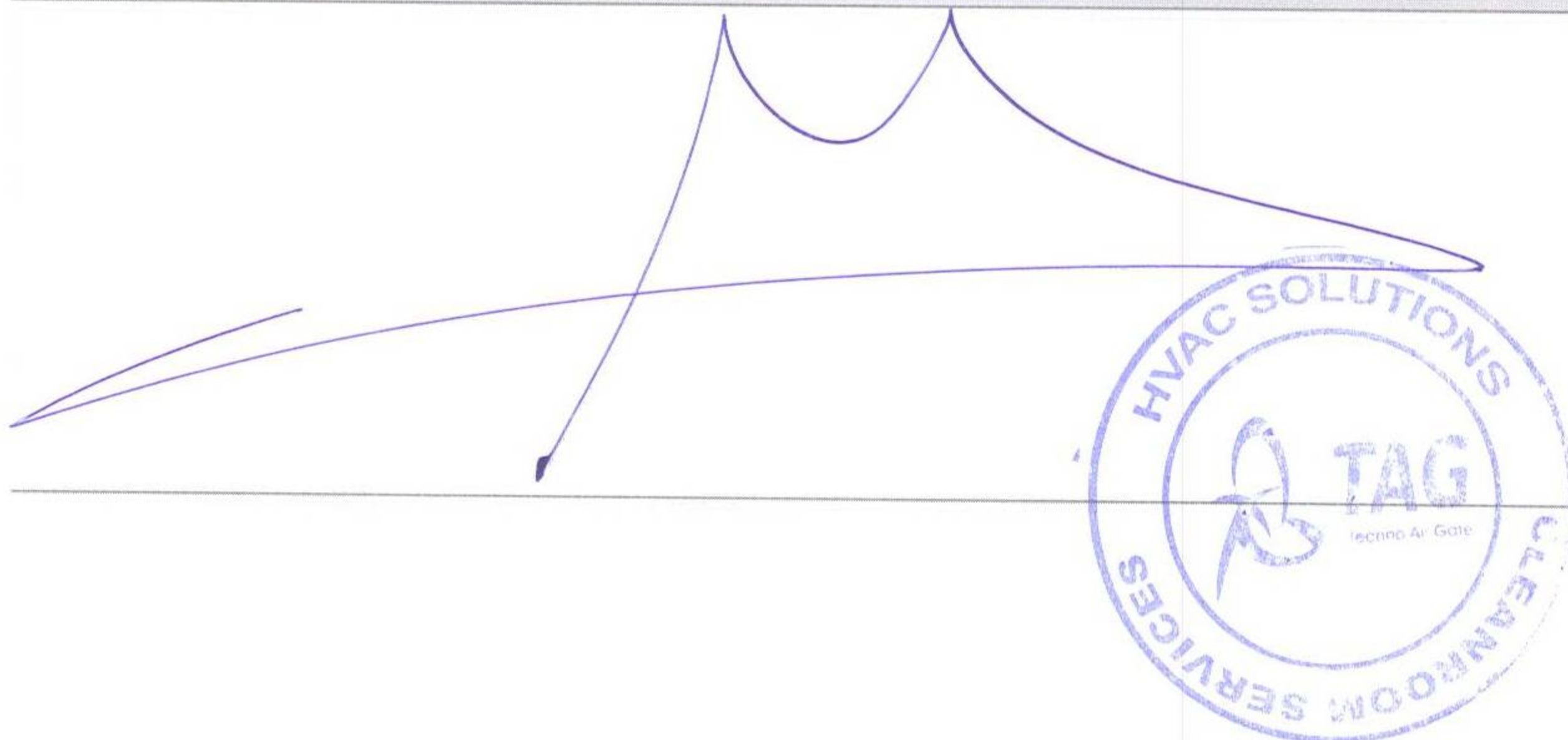
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## Data Sheet No.: 11.38 Supply Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF o8 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |



|                                                                                                                      |              |                                                               |               |                                                                                     |  |
|----------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|--|
| <br><b>STG Building-Turbine (1)</b> |              | <b>HVAC<br/>TESTING, ADJUSTING &amp; BALANCING<br/>REPORT</b> |               |  |  |
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**Data Sheet No.: 11.39 Supply Air Fan Unit Checklist**

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 09 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

**NOTES:**

*[Handwritten signature and circular stamp reading "HVAC SOLUTIONS TAG Techno Air Gate CLEANROOM SERVICES"]*

| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |

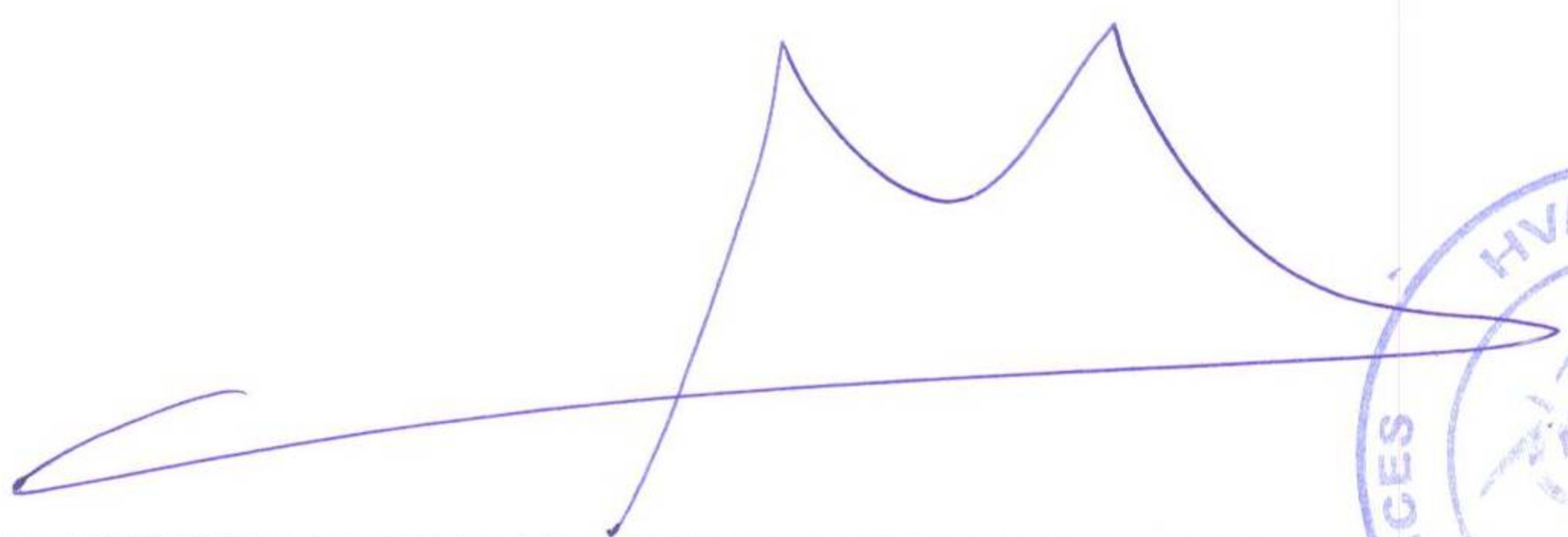


|                                                                                                                      |              |                                                               |               |                                                                                     |  |
|----------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|--|
| <br><b>STG Building-Turbine (1)</b> |              | <b>HVAC<br/>TESTING, ADJUSTING &amp; BALANCING<br/>REPORT</b> |               |  |  |
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**Data Sheet No.: 11.40 Supply Air Fan Unit Checklist**

| Supply Air Fan Unit Checklist                    |        |   |   |   |
|--------------------------------------------------|--------|---|---|---|
| Fan Unit no.                                     | SAF 10 |   |   |   |
| Check List team                                  | M      | E | T | C |
| <b>Installation</b>                              |        |   |   |   |
| Check the inner Canvas of Fan                    | ✓      |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓      |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓      |   | ✓ |   |
| Check Lubrication                                | ✓      |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓      |   | ✓ |   |
| <b>Electrical</b>                                |        |   |   |   |
| Powers available to unit Connect and disconnect. |        | ✓ |   |   |
| Power available to unit control panel.           |        | ✓ |   |   |
| Proper motor rotation verified.                  |        | ✓ | ✓ |   |

**NOTES:**




| Representative                                 | Designation | Signature                                                                             | Date       |
|------------------------------------------------|-------------|---------------------------------------------------------------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                                                                       | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                                                                       | 10/03/2018 |
| Contractor's Control representative            | C           |                                                                                       | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |  | 10/03/2018 |





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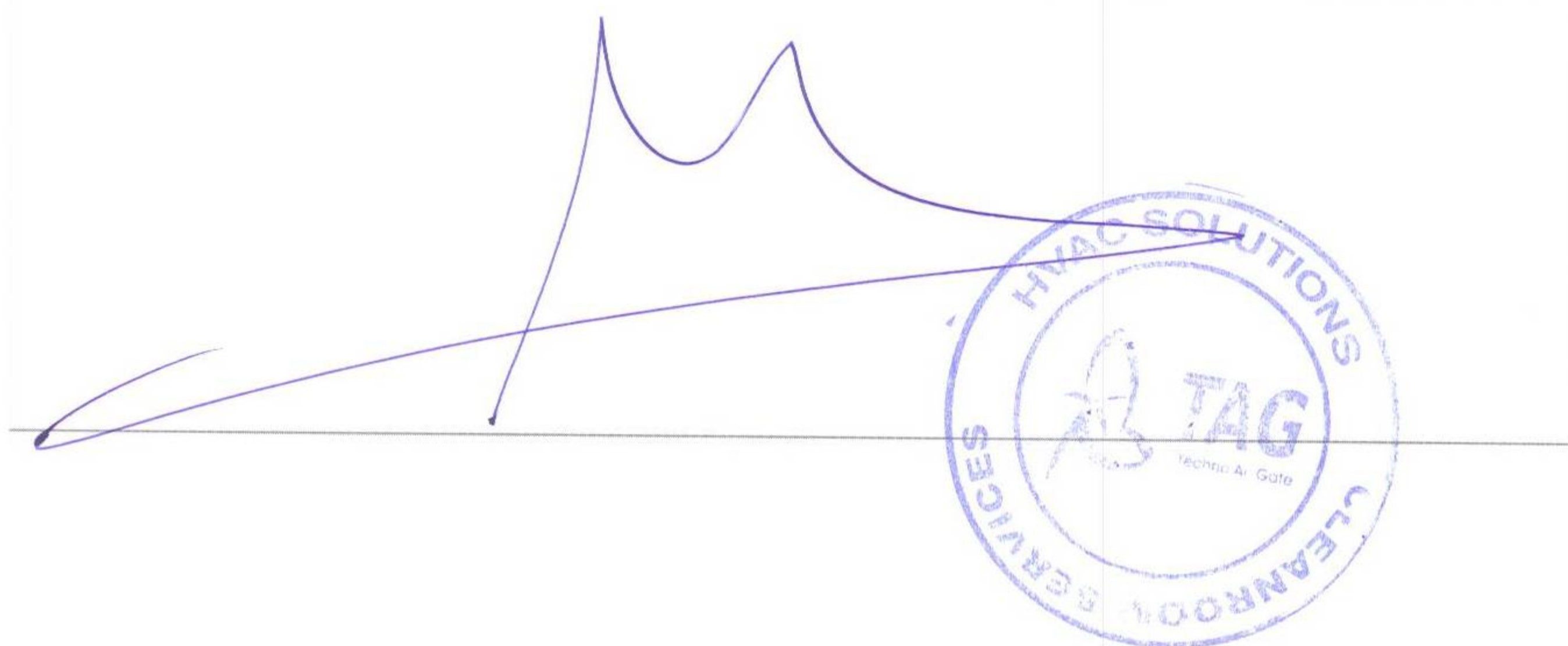
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## Data Sheet No.: 11.41 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 01 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.42 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 02 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature          | Date       |
|------------------------------------------------|-------------|--------------------|------------|
| Contractor's Mechanical representative         | M           |                    | 10/03/2018 |
| Contractor's Electrical representative         | E           |                    | 10/03/2018 |
| Contractor's Control representative            | C           |                    | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.43 Exhaust Air Fan Unit Checklist

| Supply Air Fan Unit Checklist                    |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 03 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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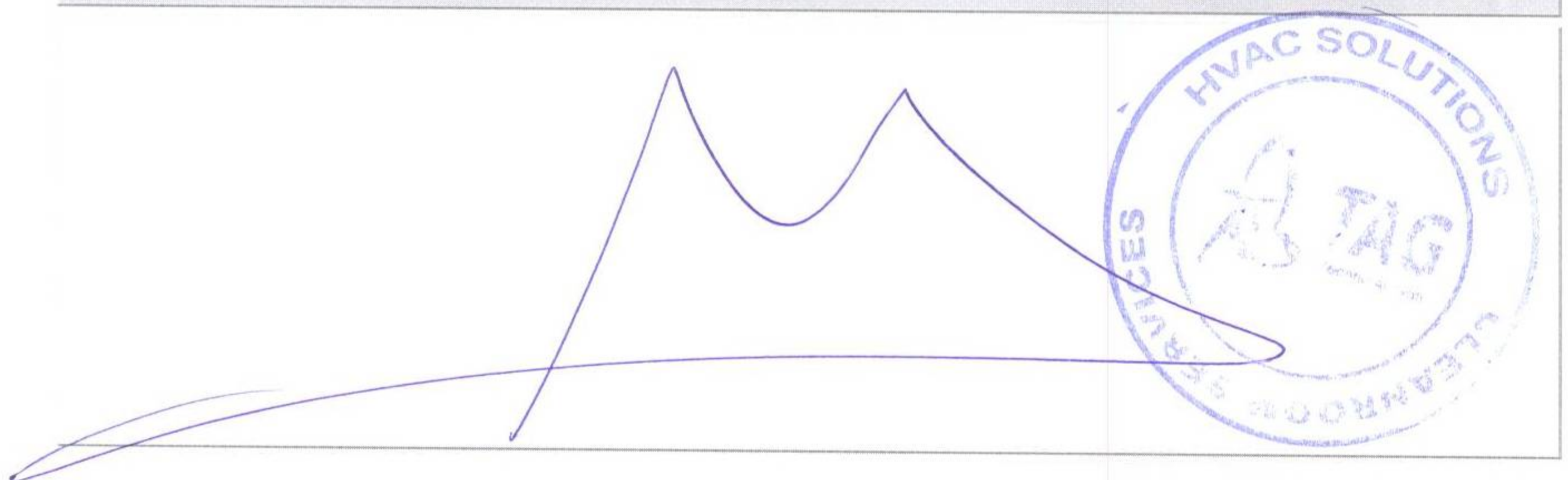
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## Data Sheet No.: 11.44 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 04 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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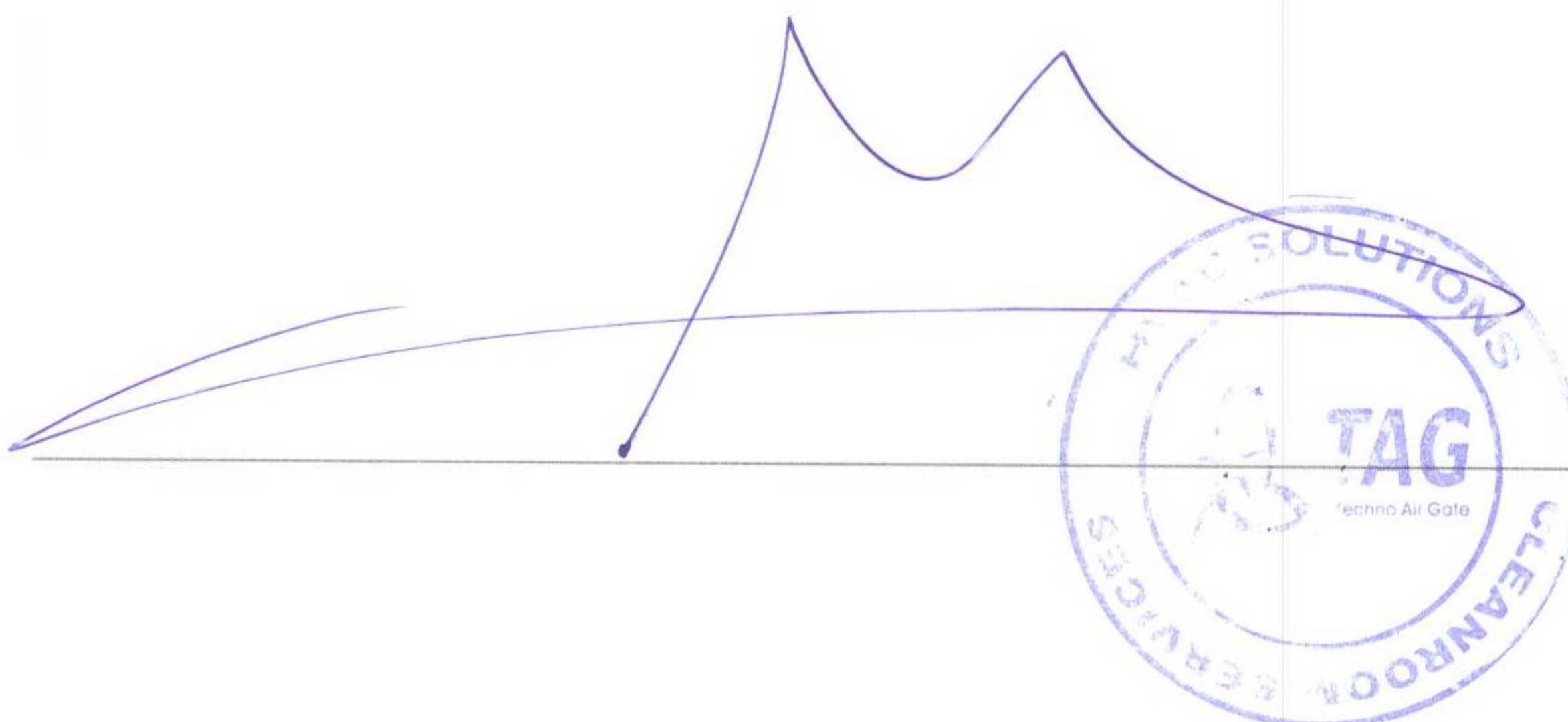
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## Data Sheet No.: 11.45 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 05 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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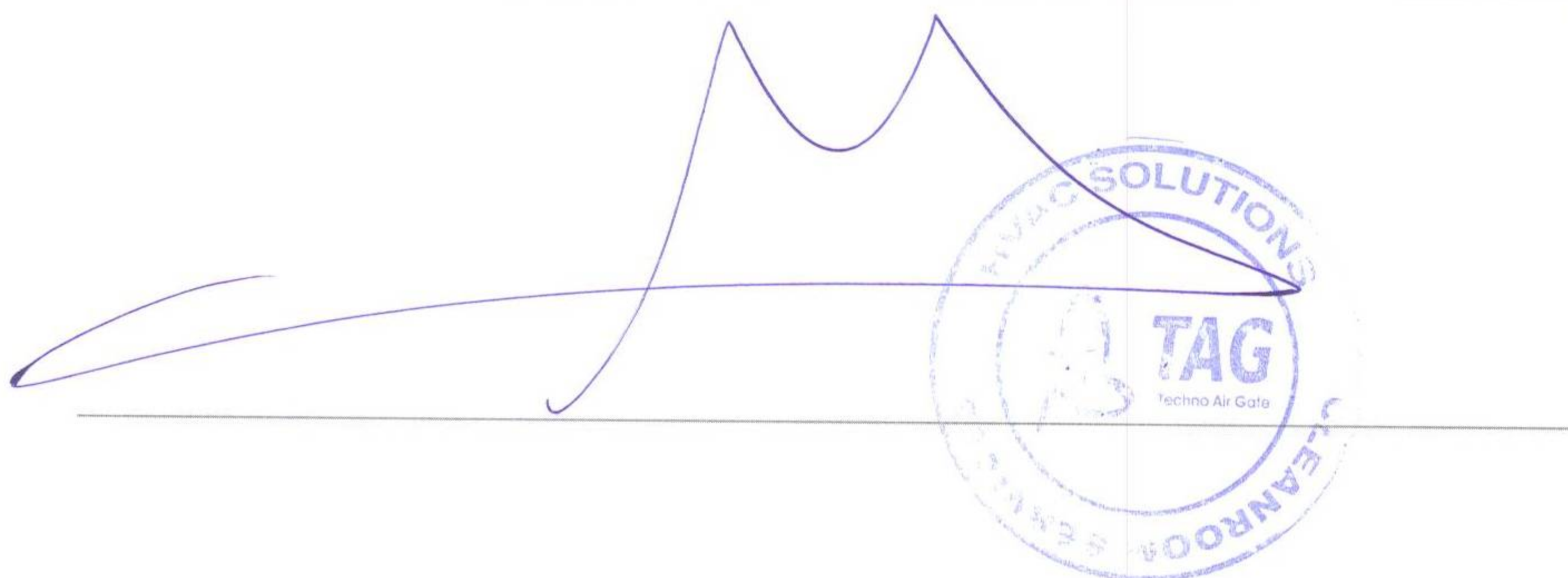
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## Data Sheet No.: 11.46 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF o6 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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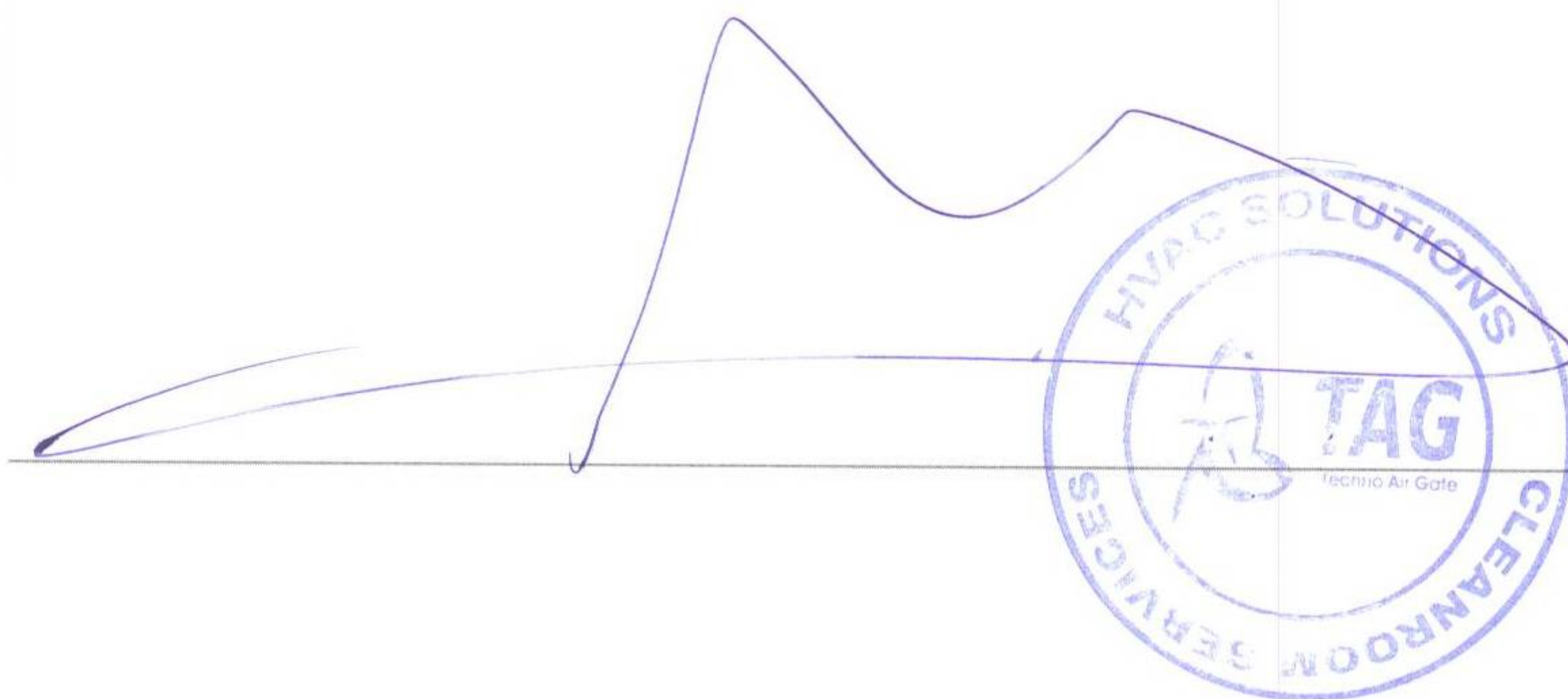
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## Data Sheet No.: 11.47 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 07 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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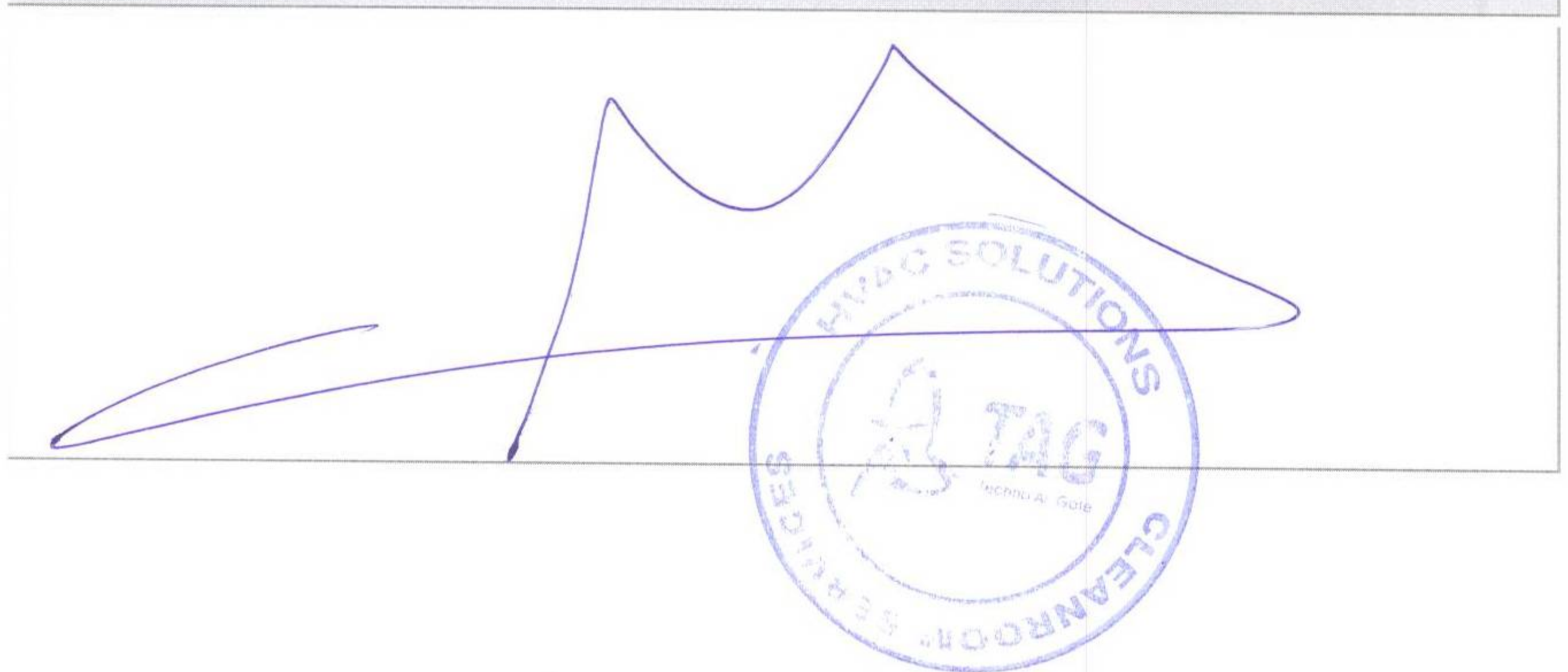
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## Data Sheet No.: 11.48 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF o8 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:



| Representative                                 | Designation | Signature | Date       |
|------------------------------------------------|-------------|-----------|------------|
| Contractor's Mechanical representative         | M           |           | 10/03/2018 |
| Contractor's Electrical representative         | E           |           | 10/03/2018 |
| Contractor's Control representative            | C           |           | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           |           | 10/03/2018 |





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## Data Sheet No.: 11.49 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 09 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

### NOTES:

*[Handwritten signature]*

*[Circular stamp: HVAC SOLUTIONS, TAG, CLEANROOM SERVICES]*

| Representative                                 | Designation | Signature          | Date       |
|------------------------------------------------|-------------|--------------------|------------|
| Contractor's Mechanical representative         | M           |                    | 10/03/2018 |
| Contractor's Electrical representative         | E           |                    | 10/03/2018 |
| Contractor's Control representative            | C           |                    | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Signature]</i> | 10/03/2018 |





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## Data Sheet No.: 11.50 Exhaust Air Fan Unit Checklist

| Exhaust Air Fan Unit Checklist                   |          |   |   |   |
|--------------------------------------------------|----------|---|---|---|
| Fan Unit no.                                     | Ex.AF 10 |   |   |   |
| Check List team                                  | M        | E | T | C |
| <b>Installation</b>                              |          |   |   |   |
| Check the inner Canvas of Fan                    | ✓        |   | ✓ |   |
| Check if vibration Isolators are Existed         | ✓        |   | ✓ |   |
| Check anti-Vibration Mountings free to vibrate   | ✓        |   | ✓ |   |
| Check Lubrication                                | ✓        |   | ✓ |   |
| Check tag Number and Manufacture's ID Plate      | ✓        |   | ✓ |   |
| <b>Electrical</b>                                |          |   |   |   |
| Powers available to unit Connect and disconnect. |          | ✓ |   |   |
| Power available to unit control panel.           |          | ✓ |   |   |
| Proper motor rotation verified.                  |          | ✓ | ✓ |   |

## NOTES:

*[Handwritten signature]*



| Representative                                 | Designation | Signature                      | Date       |
|------------------------------------------------|-------------|--------------------------------|------------|
| Contractor's Mechanical representative         | M           |                                | 10/03/2018 |
| Contractor's Electrical representative         | E           |                                | 10/03/2018 |
| Contractor's Control representative            | C           |                                | 10/03/2018 |
| Contractor's TAB& Commissioning representative | T           | <i>[Handwritten signature]</i> | 10/03/2018 |



|                                                                                                               |                                                  |                     |                                                                                     |                |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|----------------|
| <br>STG Building-Turbine (1) | HVAC<br>TESTING, ADJUSTING & BALANCING<br>REPORT |                     |  |                |
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## 12. FUNCTIONAL TESTS

### 12.1 SUPPLY AIR FAN & EXHAUST FAN UNITs MEASUREMENTS

#### **Inspection:**

-  Verify that the drives are installed properly and are of the correct size and type.
-  Refer to the prerequisite for balancing.

#### **Procedures:**

##### **Motor electrical Current Measurement.**

Check the fan for proper operating conditions and that the motor is below Full - load amperage.

##### **Differential pressure measurements (Total pressure and Pressure drop across filters).**

Measuring the pressure drop across various positions of the system and it's affect on the system performance.

##### **SAF Flow Measurements:**

1. Measure the supply air fan discharge area (Circular or rectangular).
2. Record the air velocities on the discharge area .
3. When a stable air velocity reading is displayed,Save to store the reading.
4. Calculate the average velocities.
5. Estimate the air flow rate using the following formula ( $Q=A*V$ )
6. Adjust fan speed to obtain 90% to 110% of design airflow Value (C.M.H).







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## 12.1.1 Test Data Sheet(s)

GROUND FLOOR

Datasheet number 12.1.1.1 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 01 (SAF-S-GF-01)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Ground Floor      |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 107780 | 119040         |
|                     | Fresh Air Flow Rate (CMH)      | 107780 | N.A            |
|                     | Total static pressure (pa)     | 267.8  | 260            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 35.2/36.8/34.4 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 21°C           |
|                     | dB)noise                       | N.S    | 103            |

## NOTES:

*(Handwritten signature and stamp area)*

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Reviewed By

Name

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Al-Hassan Ahmed

Signature

Date

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16/03/2018





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## Datasheet number 12.1.1.2 Supply Air Fan measurements

| Supply Air Fan DATA |                                |                           |              |
|---------------------|--------------------------------|---------------------------|--------------|
| Unit No.            |                                | SAF 02 (SAF-S-GF-02)      |              |
| Equipment Location  |                                | Wall mounted fan          |              |
| Served Area         |                                | STG Building/Ground Floor |              |
| Fan Manufacturer    |                                | GREENHECK                 |              |
| Motor Manufacturer  |                                | GREENHECK                 |              |
| Supply Air Fan      |                                |                           |              |
| Fan                 | Specification                  | Design                    | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 107780                    | 118706.9     |
|                     | Fresh Air Flow Rate (CMH)      | 107780                    | N.A          |
|                     | Total static pressure (pa)     | 267.8                     | 263          |
|                     | Fan Speed (RPM)                | 750                       | N.A          |
|                     | Fan Pulley size (mm)           | N.S                       | N.A          |
| Motor               | Specification                  | Design                    | Measured     |
|                     | Power (Kw)                     |                           | 18.5         |
|                     | Power supply (Volt/Ph/Hz)      |                           | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S                       | 35.3/36.1/35 |
|                     | Motor Speed (RPM)              | 750                       | N.A          |
|                     | Motor Pulley size (mm)         | N.S                       | N.A          |
|                     | Motor Body Temperature         | N.S                       | 22°C         |
|                     | dB)noise                       | N.S                       | 103          |

### NOTES:





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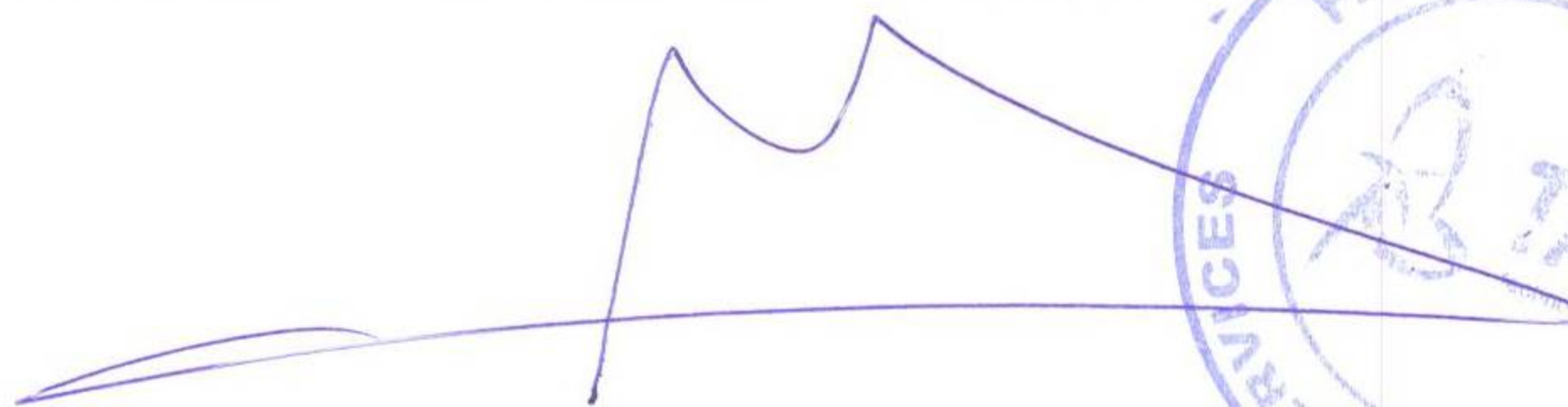
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## Datasheet number 12.1.1.3 Supply Air Fan measurements

| Supply Air Fan DATA |                                |                           |              |
|---------------------|--------------------------------|---------------------------|--------------|
| Unit No.            |                                | SAF 03 (SAF-S-GF-03)      |              |
| Equipment Location  |                                | Wall mounted fan          |              |
| Served Area         |                                | STG Building/Ground Floor |              |
| Fan Manufacturer    |                                | GREENHECK                 |              |
| Motor Manufacturer  |                                | GREENHECK                 |              |
| Supply Air Fan      |                                |                           |              |
| Fan                 | Specification                  | Design                    | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 107780                    | 118998       |
|                     | Fresh Air Flow Rate (CMH)      | 107780                    | N.A          |
|                     | Total static pressure (pa)     | 267.8                     | 255          |
|                     | Fan Speed (RPM)                | 750                       | N.A          |
|                     | Fan Pulley size (mm)           | N.S                       | N.A          |
| Motor               | Specification                  | Design                    | Measured     |
|                     | Power (Kw)                     |                           | 18.5         |
|                     | Power supply (Volt/Ph/Hz)      |                           | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S                       | 34/35.8/32.9 |
|                     | Motor Speed (RPM)              | 750                       | N.A          |
|                     | Motor Pulley size (mm)         | N.S                       | N.A          |
|                     | Motor Body Temperature         | N.S                       | 21°C         |
|                     | dB)noise                       | N.S                       | 103          |

### NOTES:




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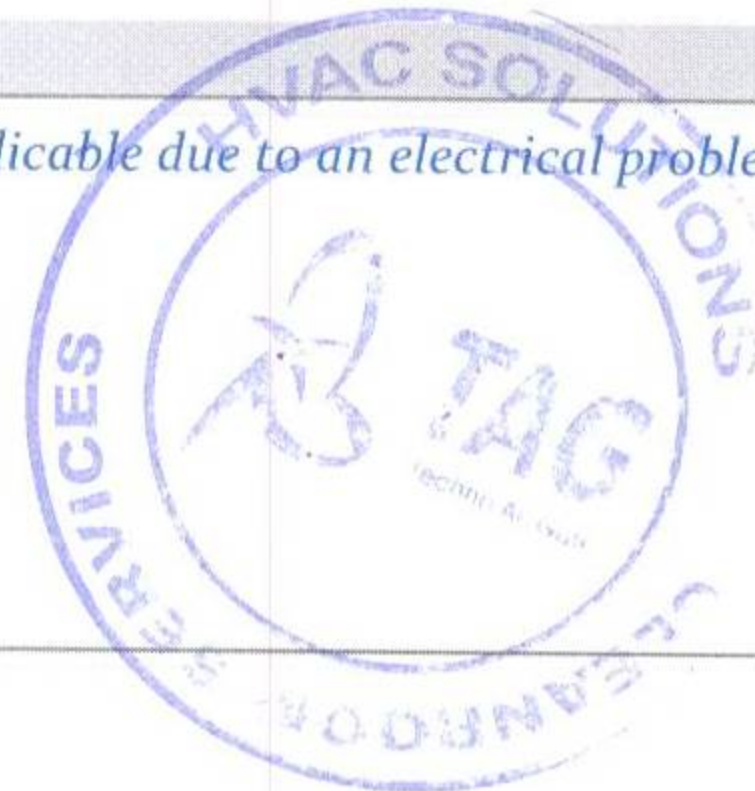
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## Datasheet number 12.1.1.4 Supply Air Fan measurements

| Supply Air Fan DATA |                                |                           |          |
|---------------------|--------------------------------|---------------------------|----------|
| Unit No.            |                                | SAF 04 (SAF-S-GF-04)      |          |
| Equipment Location  |                                | Wall mounted fan          |          |
| Served Area         |                                | STG Building/Ground Floor |          |
| Fan Manufacturer    |                                | GREENHECK                 |          |
| Motor Manufacturer  |                                | GREENHECK                 |          |
| Supply Air Fan      |                                |                           |          |
| Fan                 | Specification                  | Design                    | Measured |
|                     | Supply Air Flow Rate (CMH)     | 107780                    | N.A      |
|                     | Fresh Air Flow Rate (CMH)      | 107780                    | N.A      |
|                     | Total static pressure (pa)     | 267.8                     | N.A      |
|                     | Fan Speed (RPM)                | 750                       | N.A      |
|                     | Fan Pulley size (mm)           | N.S                       | N.A      |
| Motor               | Specification                  | Design                    | Measured |
|                     | Power (Kw)                     |                           | 18.5     |
|                     | Power supply (Volt/Ph/Hz)      |                           | 400/3/50 |
|                     | Average current(L1/L2/L3)(Amp) | N.S                       | N.A      |
|                     | Motor Speed (RPM)              | 750                       | N.A      |
|                     | Motor Pulley size (mm)         | N.S                       | N.A      |
|                     | Motor Body Temperature         | N.S                       | N.A      |
|                     | dB)noise                       | N.S                       | N.A      |

### NOTES:

1- For SAF 04 (SAF-S-GF-04), measurements were not applicable due to an electrical problem.



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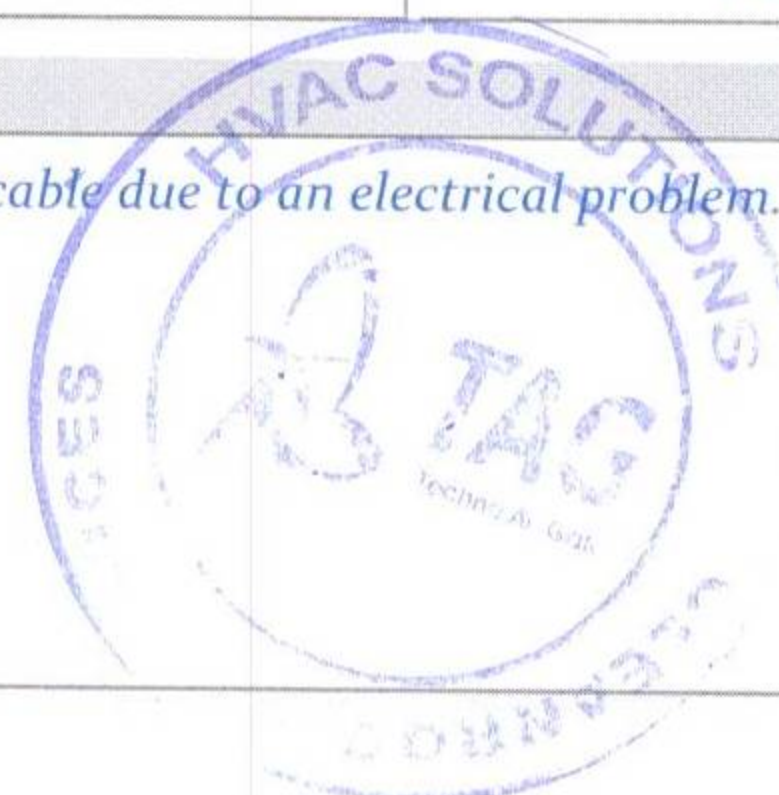
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## Datasheet number 12.1.1.5 Supply Air Fan measurements

| Supply Air Fan DATA |                                |                           |          |
|---------------------|--------------------------------|---------------------------|----------|
| Unit No.            |                                | SAF 05 (SAF-S-GF-05)      |          |
| Equipment Location  |                                | Wall mounted fan          |          |
| Served Area         |                                | STG Building/Ground Floor |          |
| Fan Manufacturer    |                                | GREENHECK                 |          |
| Motor Manufacturer  |                                | GREENHECK                 |          |
| Supply Air Fan      |                                |                           |          |
| Fan                 | Specification                  | Design                    | Measured |
|                     | Supply Air Flow Rate (CMH)     | 107780                    | N.A      |
|                     | Fresh Air Flow Rate (CMH)      | 107780                    | N.A      |
|                     | Total static pressure (pa)     | 267.8                     | N.A      |
|                     | Fan Speed (RPM)                | 750                       | N.A      |
|                     | Fan Pulley size (mm)           | N.S                       | N.A      |
| Motor               | Specification                  | Design                    | Measured |
|                     | Power (Kw)                     |                           | 18.5     |
|                     | Power supply (Volt/Ph/Hz)      |                           | 400/3/50 |
|                     | Average current(L1/L2/L3)(Amp) | N.S                       | N.A      |
|                     | Motor Speed (RPM)              | 750                       | N.A      |
|                     | Motor Pulley size (mm)         | N.S                       | N.A      |
|                     | Motor Body Temperature         | N.S                       | N.A      |
|                     | dB)noise                       | N.S                       | N.A      |

### NOTES:

1- For SAF 05(SAF-S-GF-05), measurements were not applicable due to an electrical problem.



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## Datasheet number 12.1.1.6 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |          |
|---------------------|--------------------------------|--------|----------|
| Unit No.            | SAF 06 (SAF-S-GF-06)           |        |          |
| Equipment Location  | Wall mounted fan               |        |          |
| Served Area         | STG Building/Ground Floor      |        |          |
| Fan Manufacturer    | GREENHECK                      |        |          |
| Motor Manufacturer  | GREENHECK                      |        |          |
| Supply Air Fan      |                                |        |          |
| Fan                 | Specification                  | Design | Measured |
|                     | Supply Air Flow Rate (CMH)     | 107780 | N.A      |
|                     | Fresh Air Flow Rate (CMH)      | 107780 | N.A      |
|                     | Total static pressure (pa)     | 267.8  | N.A      |
|                     | Fan Speed (RPM)                | 750    | N.A      |
|                     | Fan Pulley size (mm)           | N.S    | N.A      |
| Motor               | Specification                  | Design | Measured |
|                     | Power (Kw)                     |        | 18.5     |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50 |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | N.A      |
|                     | Motor Speed (RPM)              | 750    | N.A      |
|                     | Motor Pulley size (mm)         | N.S    | N.A      |
|                     | Motor Body Temperature         | N.S    | N.A      |
|                     | dB)noise                       | N.S    | N.A      |

### NOTES:

1- For SAF o6 (SAF-S-GF-o6), measurements were not applicable due to an electrical problem.



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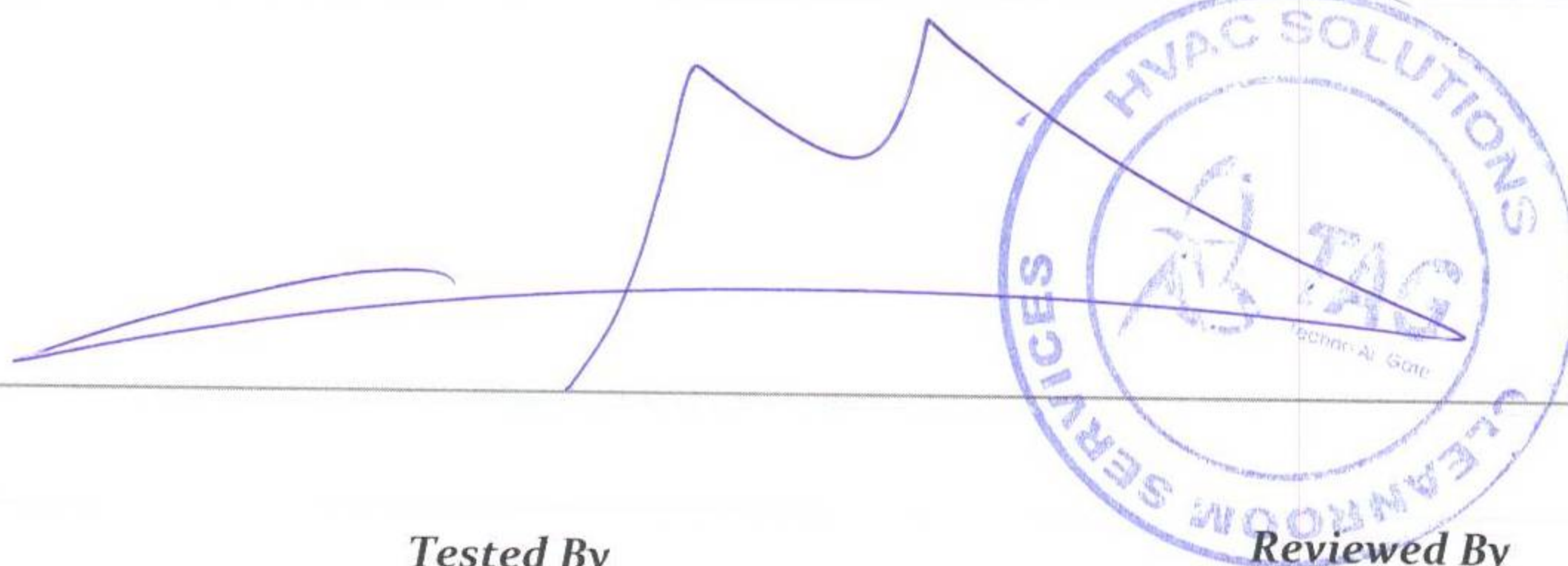
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## Datasheet number 12.1.1.7 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |              |
|---------------------|--------------------------------|--------|--------------|
| Unit No.            | SAF 07 (SAF-S-GF-07)           |        |              |
| Equipment Location  | Wall mounted fan               |        |              |
| Served Area         | STG Building/Ground Floor      |        |              |
| Fan Manufacturer    | GREENHECK                      |        |              |
| Motor Manufacturer  | GREENHECK                      |        |              |
| Supply Air Fan      |                                |        |              |
| Fan                 | Specification                  | Design | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 107780 | 118706.6     |
|                     | Fresh Air Flow Rate (CMH)      | 107780 | N.A          |
|                     | Total static pressure (pa)     | 267.8  | 260          |
|                     | Fan Speed (RPM)                | 750    | N.A          |
|                     | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor               | Specification                  | Design | Measured     |
|                     | Power (Kw)                     |        | 18.5         |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 35.8/37.6/35 |
|                     | Motor Speed (RPM)              | 750    | N.A          |
|                     | Motor Pulley size (mm)         | N.S    | N.A          |
|                     | Motor Body Temperature         | N.S    | 20°C         |
|                     | dB)noise                       | N.S    | 102          |

### NOTES:



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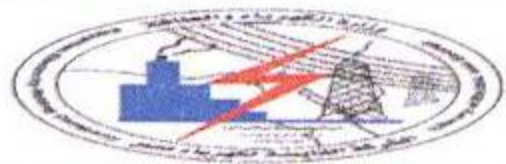
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## Datasheet number 12.1.1.8 Supply Air Fan measurements

| Supply Air Fan DATA |                                |                           |                |
|---------------------|--------------------------------|---------------------------|----------------|
| Unit No.            |                                | SAF o8 (SAF-S-GF-o8)      |                |
| Equipment Location  |                                | Wall mounted fan          |                |
| Served Area         |                                | STG Building/Ground Floor |                |
| Fan Manufacturer    |                                | GREENHECK                 |                |
| Motor Manufacturer  |                                | GREENHECK                 |                |
| Supply Air Fan      |                                |                           |                |
| Fan                 | Specification                  | Design                    | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 107780                    | 115811.7       |
|                     | Fresh Air Flow Rate (CMH)      | 107780                    | N.A            |
|                     | Total static pressure (pa)     | 267.8                     | 260            |
|                     | Fan Speed (RPM)                | 750                       | N.A            |
|                     | Fan Pulley size (mm)           | N.S                       | N.A            |
| Motor               | Specification                  | Design                    | Measured       |
|                     | Power (Kw)                     |                           | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |                           | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S                       | 35.6/37.1/34.1 |
|                     | Motor Speed (RPM)              | 1450                      | N.A            |
|                     | Motor Pulley size (mm)         | N.S                       | N.A            |
|                     | Motor Body Temperature         | N.S                       | 20°C           |
|                     | dB)noise                       | N.S                       | 103            |

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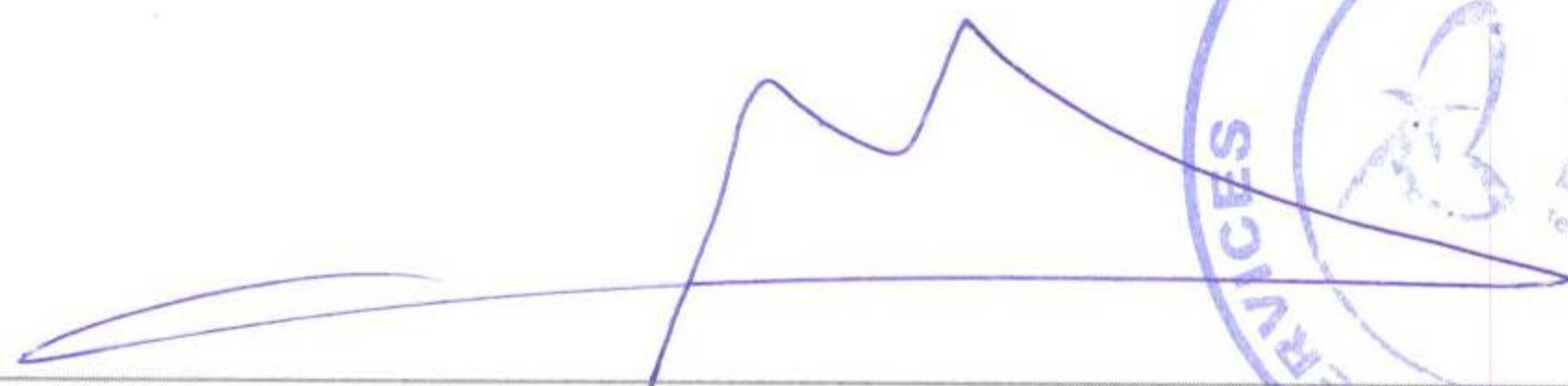
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## Datasheet number 12.1.1.9 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |            |
|----------------------|--------------------------------|--------|------------|
| Unit No.             | Ex.AF 01 (Ex.AF-S-GF-01)       |        |            |
| Equipment Location   | Wall mounted fan               |        |            |
| Served Area          | STG Building/Ground Floor      |        |            |
| Fan Manufacturer     | GREENHECK                      |        |            |
| Motor Manufacturer   | GREENHECK                      |        |            |
| Exhaust Air Fan      |                                |        |            |
| Fan                  | Specification                  | Design | Measured   |
|                      | Exhaust Air Flow Rate (CMH)    | 107780 | 111468     |
|                      | Total static pressure (pa)     | 90.3   | N.A        |
|                      | Fan Speed (RPM)                | 750    | N.A        |
|                      | Fan Pulley size (mm)           | N.S    | N.A        |
| Motor                | Specification                  | Design | Measured   |
|                      | Power (Kw)                     |        | 11         |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50   |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22/24.8/23 |
|                      | Motor Speed (RPM)              | 750    | N.A        |
|                      | Motor Pulley size (mm)         | N.S    | N.A        |
|                      | Motor Body Temperature         | N.S    | 21°C       |
|                      | dB)noise                       | N.S    | 88.5       |

### NOTES:




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Datasheet number 12.1.1.10 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |          |
|----------------------|--------------------------------|--------|----------|
| Unit No.             | Ex.AF 02 (Ex.AF-S-GF-02)       |        |          |
| Equipment Location   | Wall mounted fan               |        |          |
| Served Area          | STG Building/Ground Floor      |        |          |
| Fan Manufacturer     | GREENHECK                      |        |          |
| Motor Manufacturer   | GREENHECK                      |        |          |
| Exhaust Air Fan      |                                |        |          |
| Fan                  | Specification                  | Design | Measured |
|                      | Exhaust Air Flow Rate (CMH)    | 107780 | 107125   |
|                      | Total static pressure (pa)     | 90.3   | N.A      |
|                      | Fan Speed (RPM)                | 750    | N.A      |
|                      | Fan Pulley size (mm)           | N.S    | N.A      |
| Motor                | Specification                  | Design | Measured |
|                      | Power (Kw)                     |        | 11       |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 23/25/24 |
|                      | Motor Speed (RPM)              | 750    | N.A      |
|                      | Motor Pulley size (mm)         | N.S    | N.A      |
|                      | Motor Body Temperature         | N.S    | 23°C     |
|                      | dB)noise                       | N.S    | 89.5     |

NOTES:

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Reviewed By

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Marwan Samy

Al-Hassan Ahmed

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## Datasheet number 12.1.1.11 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |            |
|----------------------|--------------------------------|--------|------------|
| Unit No.             | Ex.AF 03 (Ex.AF-S-GF-03)       |        |            |
| Equipment Location   | Wall mounted fan               |        |            |
| Served Area          | STG Building/Ground Floor      |        |            |
| Fan Manufacturer     | GREENHECK                      |        |            |
| Motor Manufacturer   | GREENHECK                      |        |            |
| Exhaust Air Fan      |                                |        |            |
| Fan                  | Specification                  | Design | Measured   |
|                      | Exhaust Air Flow Rate (CMH)    | 107780 | 110021     |
|                      | Total static pressure (pa)     | 90.3   | N.A        |
|                      | Fan Speed (RPM)                | 750    | N.A        |
|                      | Fan Pulley size (mm)           | N.S    | N.A        |
| Motor                | Specification                  | Design | Measured   |
|                      | Power (Kw)                     |        | 11         |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50   |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22/23/23.8 |
|                      | Motor Speed (RPM)              | 750    | N.A        |
|                      | Motor Pulley size (mm)         | N.S    | N.A        |
|                      | Motor Body Temperature         | N.S    | 21°C       |
|                      | dB)noise                       | N.S    | 88.5       |

### NOTES:




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Name Marwan Samy

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Date 13/03/2018

**Reviewed By**

Name Al-Hassan Ahmed

Signature 

Date 16/03/2018





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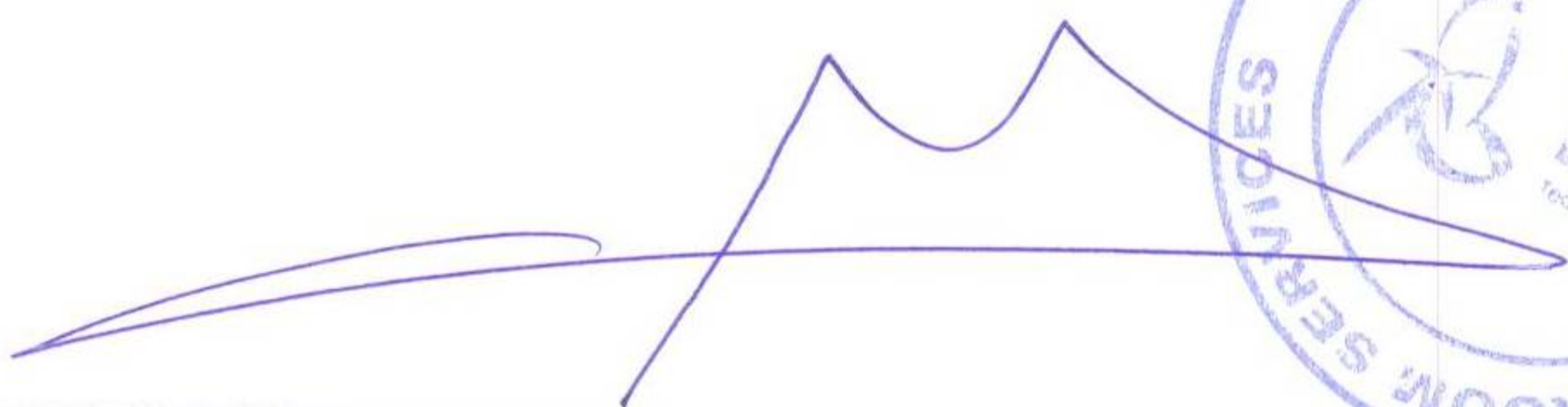
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## Datasheet number 12.1.1.12 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |              |
|----------------------|--------------------------------|--------|--------------|
| Unit No.             | Ex.AF 04 (Ex.AF-S-GF-04)       |        |              |
| Equipment Location   | Wall mounted fan               |        |              |
| Served Area          | STG Building/Ground Floor      |        |              |
| Fan Manufacturer     | GREENHECK                      |        |              |
| Motor Manufacturer   | GREENHECK                      |        |              |
| Exhaust Air Fan      |                                |        |              |
| Fan                  | Specification                  | Design | Measured     |
|                      | Exhaust Air Flow Rate (CMH)    | 107780 | 111468       |
|                      | Total static pressure (pa)     | 90.3   | N.A          |
|                      | Fan Speed (RPM)                | 750    | N.A          |
|                      | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor                | Specification                  | Design | Measured     |
|                      | Power (Kw)                     |        | 11           |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22.2/23.3/23 |
|                      | Motor Speed (RPM)              | 750    | N.A          |
|                      | Motor Pulley size (mm)         | N.S    | N.A          |
|                      | Motor Body Temperature         | N.S    | 20°C         |
|                      | dB)noise                       | N.S    | 89.5         |

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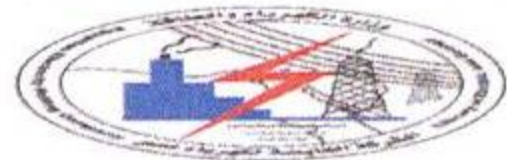



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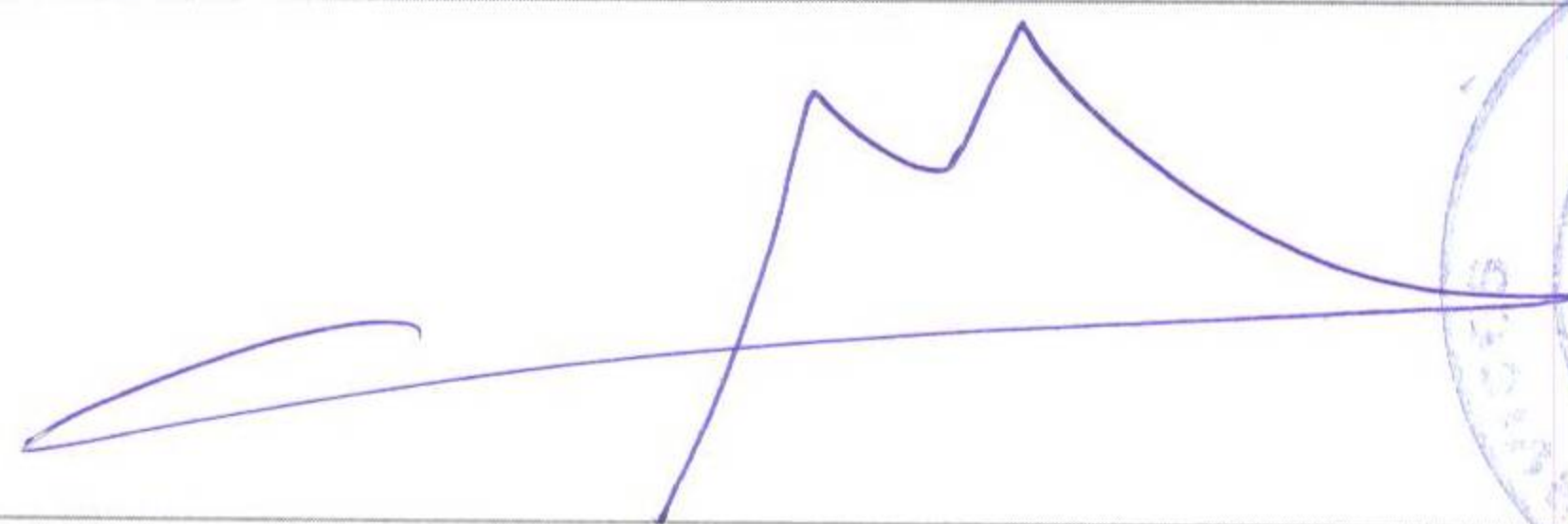
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## Datasheet number 12.1.1.13 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |                |
|----------------------|--------------------------------|--------|----------------|
| Unit No.             | Ex.AF 05 (Ex.AF-S-GF-05)       |        |                |
| Equipment Location   | Wall mounted fan               |        |                |
| Served Area          | STG Building/Ground Floor      |        |                |
| Fan Manufacturer     | GREENHECK                      |        |                |
| Motor Manufacturer   | GREENHECK                      |        |                |
| Exhaust Air Fan      |                                |        |                |
| Fan                  | Specification                  | Design | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 107780 | 117259         |
|                      | Total static pressure (pa)     | 90.3   | N.A            |
|                      | Fan Speed (RPM)                | 750    | N.A            |
|                      | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor                | Specification                  | Design | Measured       |
|                      | Power (Kw)                     |        | 11             |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22.8/23.1/23.1 |
|                      | Motor Speed (RPM)              | 750    | N.A            |
|                      | Motor Pulley size (mm)         | N.S    | N.A            |
|                      | Motor Body Temperature         | N.S    | 21°C           |
|                      | dB)noise                       | N.S    | 89.5           |

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## Datasheet number 12.1.1.14 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |                           |        |            |
|----------------------|--------------------------------|---------------------------|--------|------------|
| Unit No.             |                                | Ex.AF 06(Ex.AF-S-GF-06)   |        |            |
| Equipment Location   |                                | Wall mounted fan          |        |            |
| Served Area          |                                | STG Building/Ground Floor |        |            |
| Fan Manufacturer     |                                | GREENHECK                 |        |            |
| Motor Manufacturer   |                                | GREENHECK                 |        |            |
| Exhaust Air Fan      |                                |                           |        |            |
| Fan                  | Specification                  |                           | Design | Measured   |
|                      | Exhaust Air Flow Rate (CMH)    |                           | 107780 | 100128     |
|                      | Total static pressure (pa)     |                           | 90.3   | N.A        |
|                      | Fan Speed (RPM)                |                           | 750    | N.A        |
|                      | Fan Pulley size (mm)           |                           | N.S    | N.A        |
| Motor                | Specification                  |                           | Design | Measured   |
|                      | Power (Kw)                     |                           |        | 11         |
|                      | Power supply (Volt/Ph/Hz)      |                           |        | 400/3/50   |
|                      | Average current(L1/L2/L3)(Amp) |                           | N.S    | 22/23/22.8 |
|                      | Motor Speed (RPM)              |                           | 750    | N.A        |
|                      | Motor Pulley size (mm)         |                           | N.S    | N.A        |
|                      | Motor Body Temperature         |                           | N.S    | 23°C       |
|                      | dB)noise                       |                           | N.S    | 88         |

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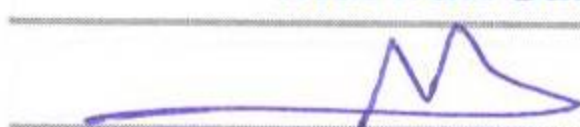
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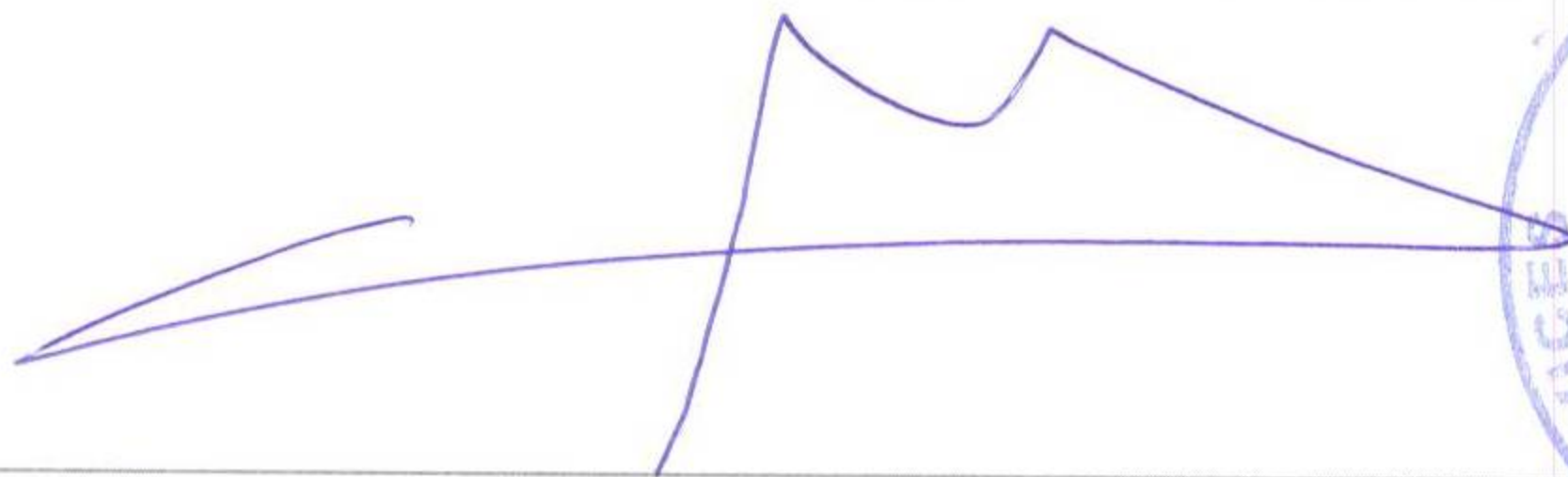
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Datasheet number 12.1.1.15 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |                |
|----------------------|--------------------------------|--------|----------------|
| Unit No.             | Ex.AF 07 (Ex.AF-S-GF-07)       |        |                |
| Equipment Location   | Wall mounted fan               |        |                |
| Served Area          | STG Building/Ground Floor      |        |                |
| Fan Manufacturer     | GREENHECK                      |        |                |
| Motor Manufacturer   | GREENHECK                      |        |                |
| Exhaust Air Fan      |                                |        |                |
| Fan                  | Specification                  | Design | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 107780 | 104230         |
|                      | Total static pressure (pa)     | 90.3   | N.A            |
|                      | Fan Speed (RPM)                | 750    | N.A            |
|                      | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor                | Specification                  | Design | Measured       |
|                      | Power (Kw)                     |        | 11             |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22.8/22.9/22.8 |
|                      | Motor Speed (RPM)              | 750    | N.A            |
|                      | Motor Pulley size (mm)         | N.S    | N.A            |
|                      | Motor Body Temperature         | N.S    | 23°C           |
|                      | dB)noise                       | N.S    | 89.5           |

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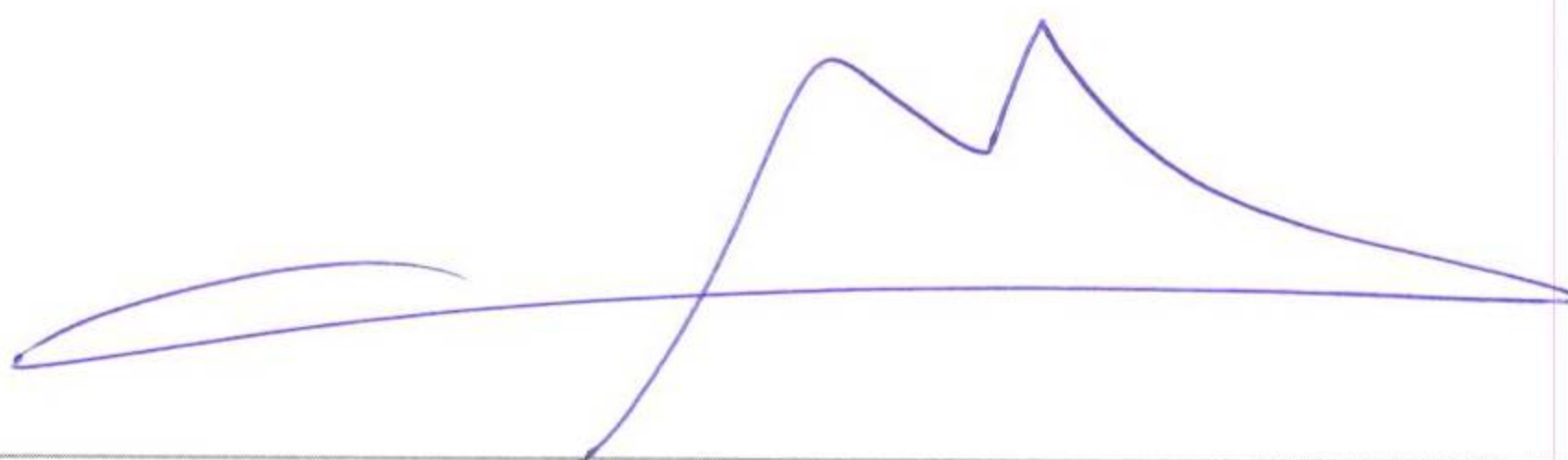
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Datasheet number 12.1.1.16 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |                |
|----------------------|--------------------------------|--------|----------------|
| Unit No.             | Ex.AF o8 (Ex.AF-S-GF-o8)       |        |                |
| Equipment Location   | Wall mounted fan               |        |                |
| Served Area          | STG Building/Ground Floor      |        |                |
| Fan Manufacturer     | GREENHECK                      |        |                |
| Motor Manufacturer   | GREENHECK                      |        |                |
| Exhaust Air Fan      |                                |        |                |
| Fan                  | Specification                  | Design | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 107780 | 107125         |
|                      | Total static pressure (pa)     | 90.3   | N.A            |
|                      | Fan Speed (RPM)                | 750    | N.A            |
|                      | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor                | Specification                  | Design | Measured       |
|                      | Power (Kw)                     |        | 11             |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 23.2/23.1/23.1 |
|                      | Motor Speed (RPM)              | 750    | N.A            |
|                      | Motor Pulley size (mm)         | N.S    | N.A            |
|                      | Motor Body Temperature         | N.S    | 23°C           |
|                      | dB)noise                       | N.S    | 89             |

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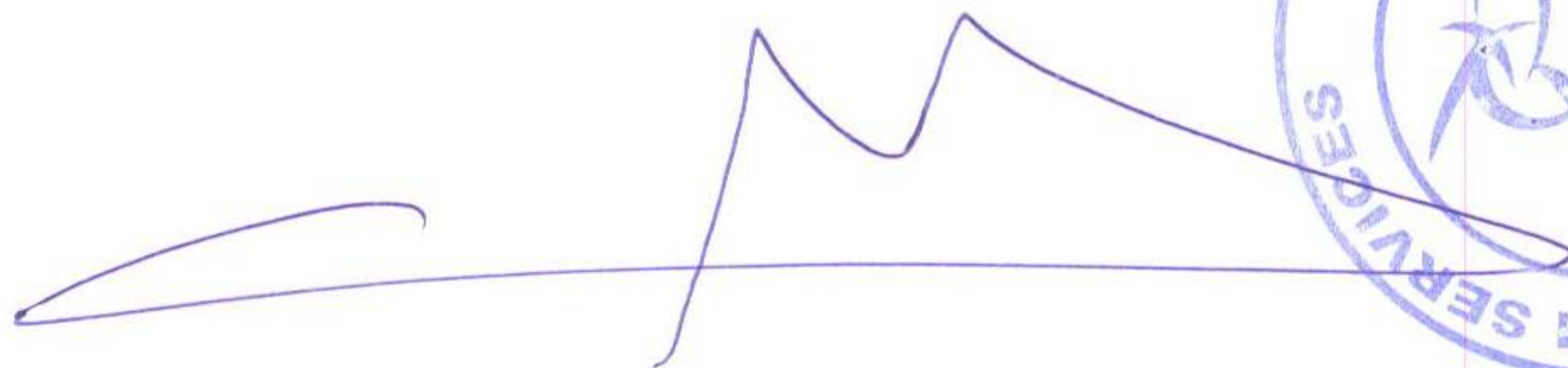
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**MEZZANINE FLOOR**

Datasheet number 12.1.1.17 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 01 (SAF-S-MF-01)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Mezzanine Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 96900  | 106788         |
|                     | Fresh Air Flow Rate (CMH)      | 96900  | N.A            |
|                     | Total static pressure (pa)     | 266.8  | 260            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 15             |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 28.3/28.9/27.6 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 23°C           |
|                     | dB)noise                       | N.S    | 101            |

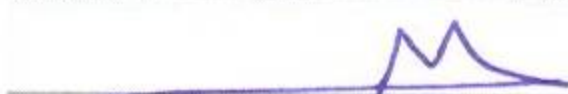
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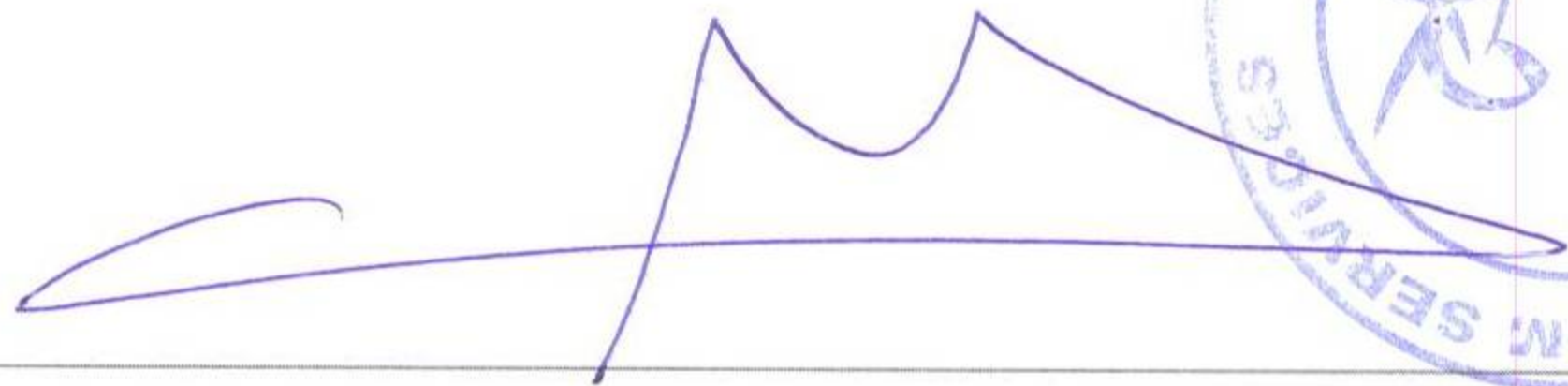
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## Datasheet number 12.1.1.18 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 02(SAF-S-MF-02)            |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Mezzanine Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 96900  | 106898         |
|                     | Fresh Air Flow Rate (CMH)      | 96900  | N.A            |
|                     | Total static pressure (pa)     | 266.8  | 260            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 15             |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 29.7/30.2/29.1 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 23°C           |
|                     | dB)noise                       | N.S    | 103            |

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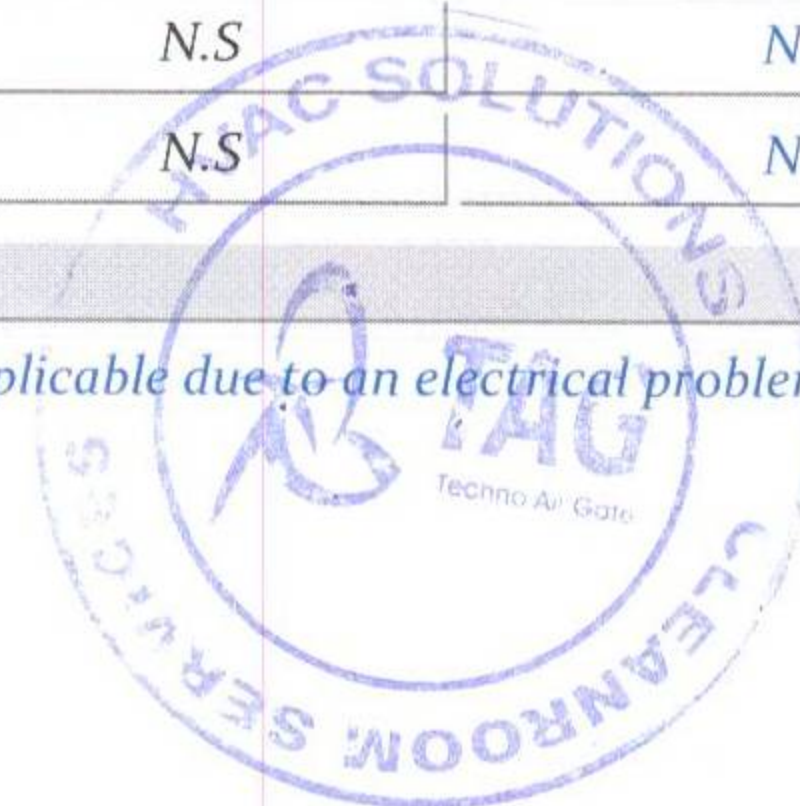
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## Datasheet number 12.1.1.19 Supply Air Fan measurements

| Supply Air Fan DATA |                                |                              |          |
|---------------------|--------------------------------|------------------------------|----------|
| Unit No.            |                                | SAF 03(SAF-S-MF-03)          |          |
| Equipment Location  |                                | Wall mounted fan             |          |
| Served Area         |                                | STG Building/Mezzanine Floor |          |
| Fan Manufacturer    |                                | GREENHECK                    |          |
| Motor Manufacturer  |                                | GREENHECK                    |          |
| Supply Air Fan      |                                |                              |          |
| Fan                 | Specification                  | Design                       | Measured |
|                     | Supply Air Flow Rate (CMH)     | 96900                        | N.A      |
|                     | Fresh Air Flow Rate (CMH)      | 96900                        | N.A      |
|                     | Total static pressure (pa)     | 266.8                        | N.A      |
|                     | Fan Speed (RPM)                | 750                          | N.A      |
|                     | Fan Pulley size (mm)           | N.S                          | N.A      |
| Motor               | Specification                  | Design                       | Measured |
|                     | Power (Kw)                     |                              | 15       |
|                     | Power supply (Volt/Ph/Hz)      |                              | 400/3/50 |
|                     | Average current(L1/L2/L3)(Amp) | N.S                          | N.A      |
|                     | Motor Speed (RPM)              | 750                          | N.A      |
|                     | Motor Pulley size (mm)         | N.S                          | N.A      |
|                     | Motor Body Temperature         | N.S                          | N.A      |
|                     | dB)noise                       | N.S                          | N.A      |

### NOTES:

1- For SAF 03 (SAF-S-MF-03), measurements were not applicable due to an electrical problem.



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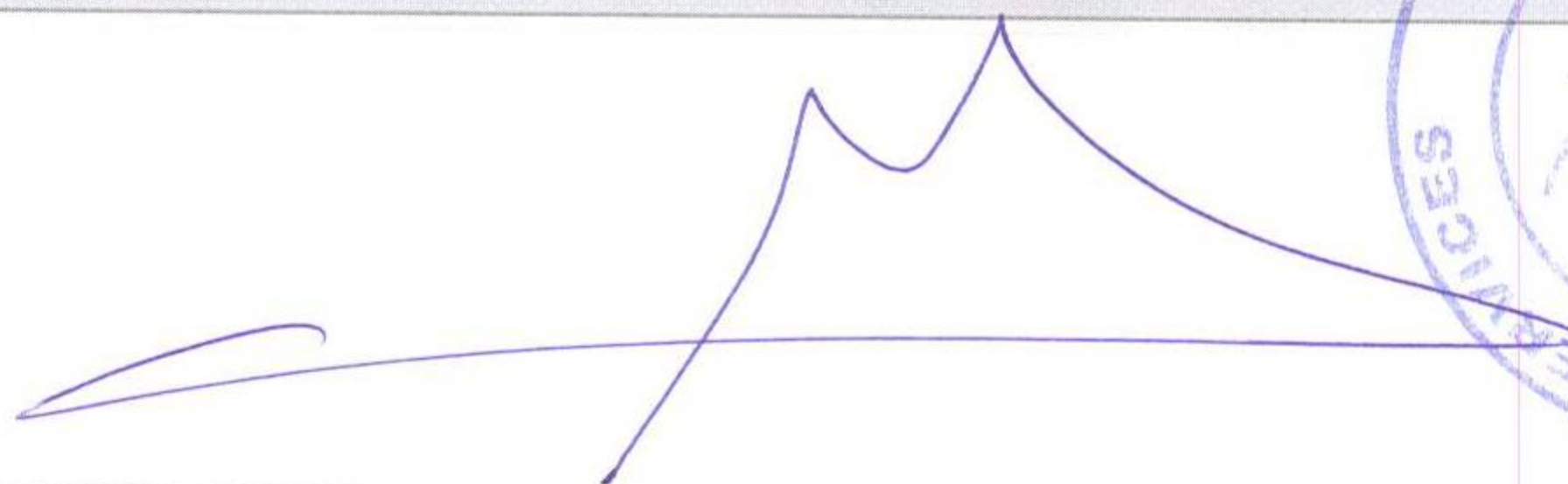
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## Datasheet number 12.1.1.20 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 04 (SAF-S-MF-04)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Mezzanine Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 96900  | 106998         |
|                     | Fresh Air Flow Rate (CMH)      | 96900  | N.A            |
|                     | Total static pressure (pa)     | 266.8  | 265            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 15             |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 28.3/28.9/27.6 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 22°C           |
|                     | dB)noise                       | N.S    | 101            |

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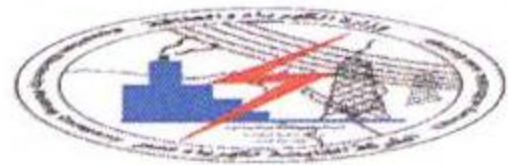
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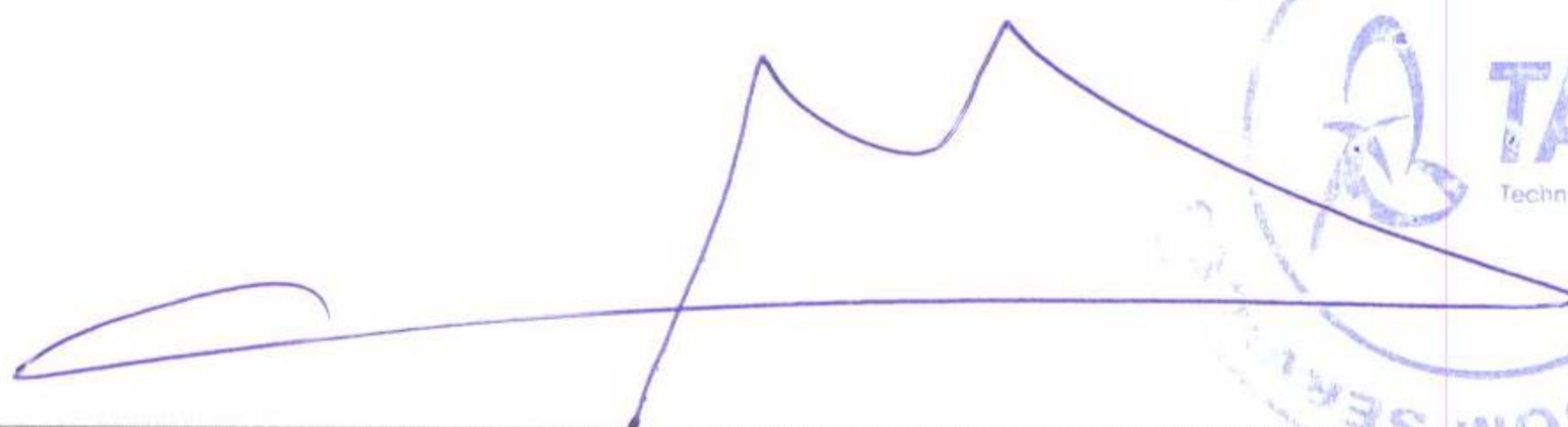
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Datasheet number 12.1.1.21 Supply Air Fan measurements

| Supply Air Fan DATA |                                |                              |              |
|---------------------|--------------------------------|------------------------------|--------------|
| Unit No.            |                                | SAF 05 (SAF-S-MF-05)         |              |
| Equipment Location  |                                | Wall mounted fan             |              |
| Served Area         |                                | STG Building/Mezzanine Floor |              |
| Fan Manufacturer    |                                | GREENHECK                    |              |
| Motor Manufacturer  |                                | GREENHECK                    |              |
| Supply Air Fan      |                                |                              |              |
| Fan                 | Specification                  | Design                       | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 96900                        | 105678       |
|                     | Fresh Air Flow Rate (CMH)      | 96900                        | N.A          |
|                     | Total static pressure (pa)     | 266.8                        | 260          |
|                     | Fan Speed (RPM)                | 750                          | N.A          |
|                     | Fan Pulley size (mm)           | N.S                          | N.A          |
| Motor               | Specification                  | Design                       | Measured     |
|                     | Power (Kw)                     |                              | 15           |
|                     | Power supply (Volt/Ph/Hz)      |                              | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S                          | 30/30.6/29.4 |
|                     | Motor Speed (RPM)              | 750                          | N.A          |
|                     | Motor Pulley size (mm)         | N.S                          | N.A          |
|                     | Motor Body Temperature         | N.S                          | 22°C         |
|                     | dB)noise                       | N.S                          | 101          |

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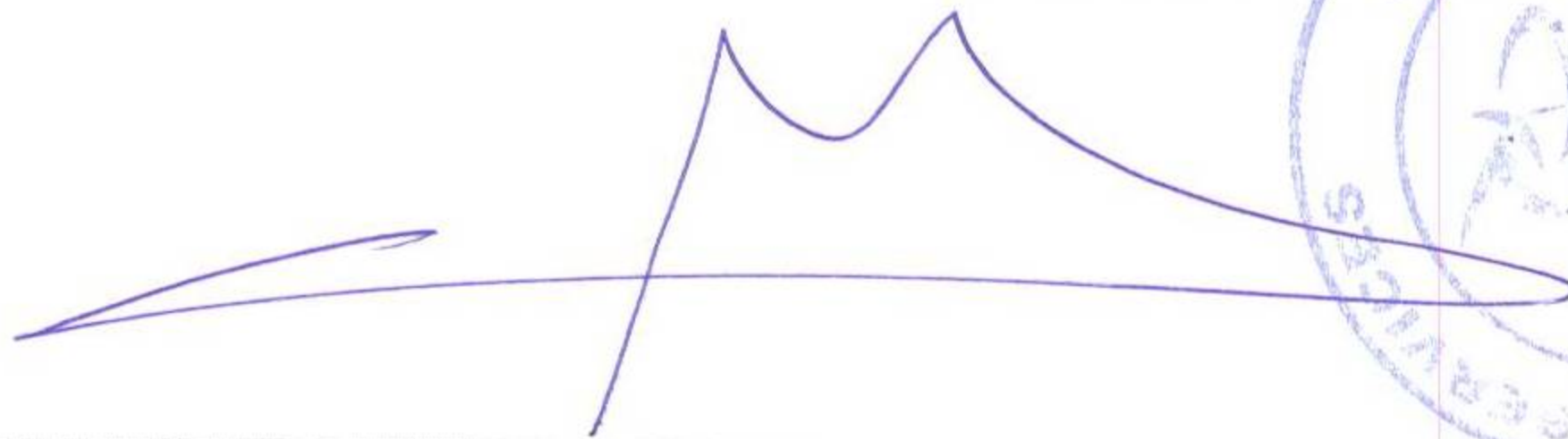
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Datasheet number 12.1.1.22 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF o6 (SAF-S-MF-o6)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Mezzanine Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 96900  | 96850          |
|                     | Fresh Air Flow Rate (CMH)      | 96900  | N.A            |
|                     | Total static pressure (pa)     | 266.8  | 260            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 15             |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 28.8/27.6/29.5 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 23°C           |
|                     | dB)noise                       | N.S    | 101            |

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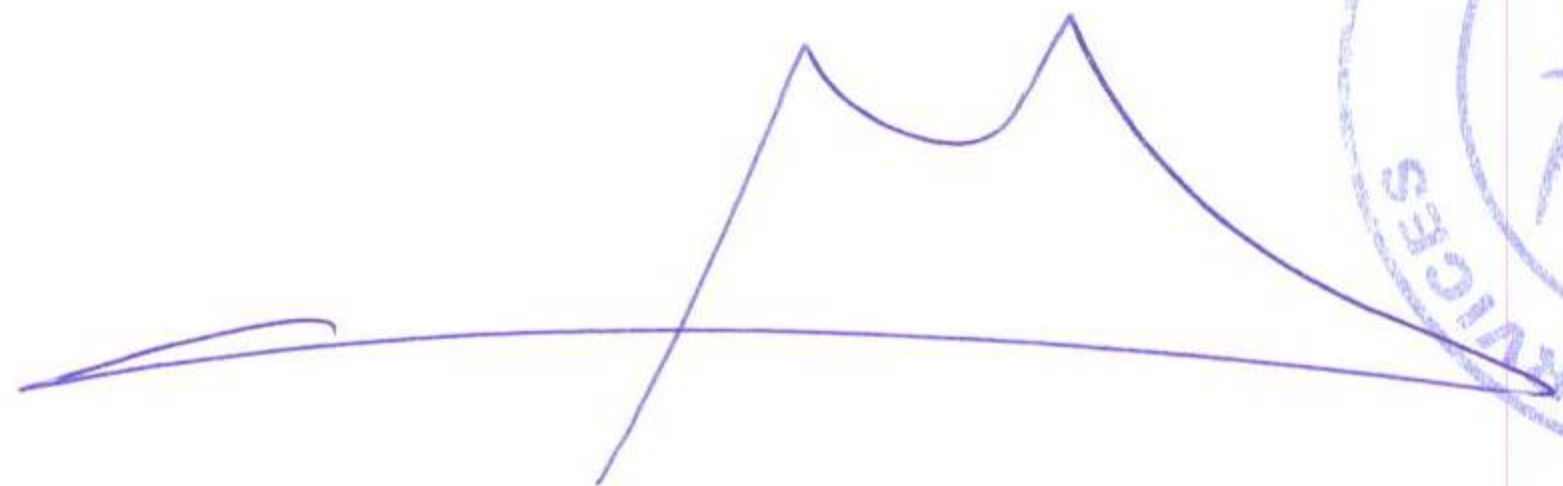
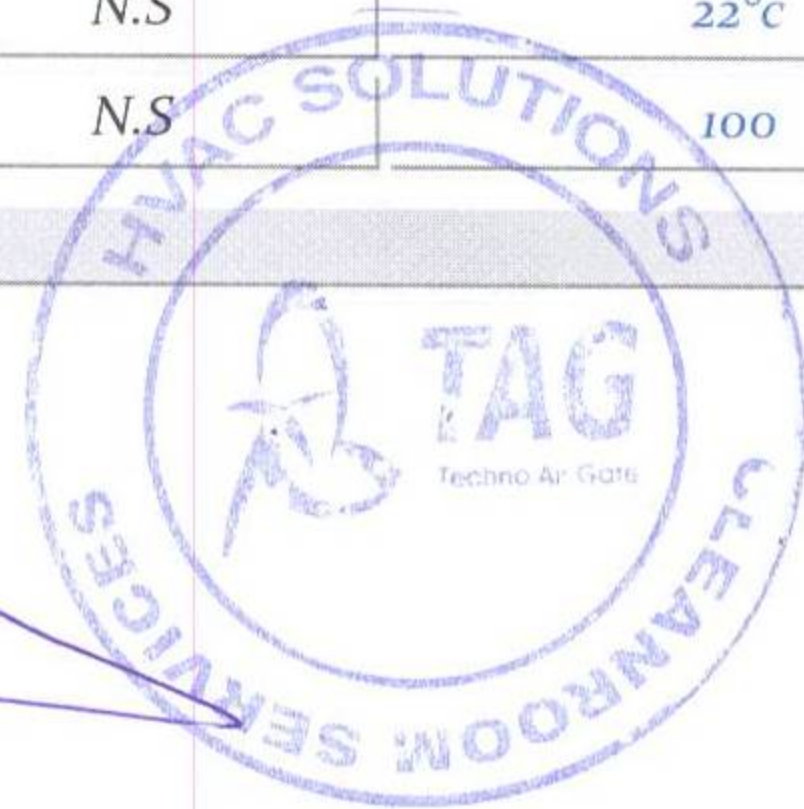
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## Datasheet number 12.1.1.23 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |              |
|---------------------|--------------------------------|--------|--------------|
| Unit No.            | SAF 07 (SAF-S-MF-07)           |        |              |
| Equipment Location  | Wall mounted fan               |        |              |
| Served Area         | STG Building/Mezzanine Floor   |        |              |
| Fan Manufacturer    | GREENHECK                      |        |              |
| Motor Manufacturer  | GREENHECK                      |        |              |
| Supply Air Fan      |                                |        |              |
| Fan                 | Specification                  | Design | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 96900  | 96000        |
|                     | Fresh Air Flow Rate (CMH)      | 96900  | N.A          |
|                     | Total static pressure (pa)     | 266.8  | 255          |
|                     | Fan Speed (RPM)                | 750    | N.A          |
|                     | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor               | Specification                  | Design | Measured     |
|                     | Power (Kw)                     |        | 15           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 34/34.3/33.1 |
|                     | Motor Speed (RPM)              | 750    | N.A          |
|                     | Motor Pulley size (mm)         | N.S    | N.A          |
|                     | Motor Body Temperature         | N.S    | 22°C         |
|                     | dB)noise                       | N.S    | 100          |

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STG Building-Turbine (1)

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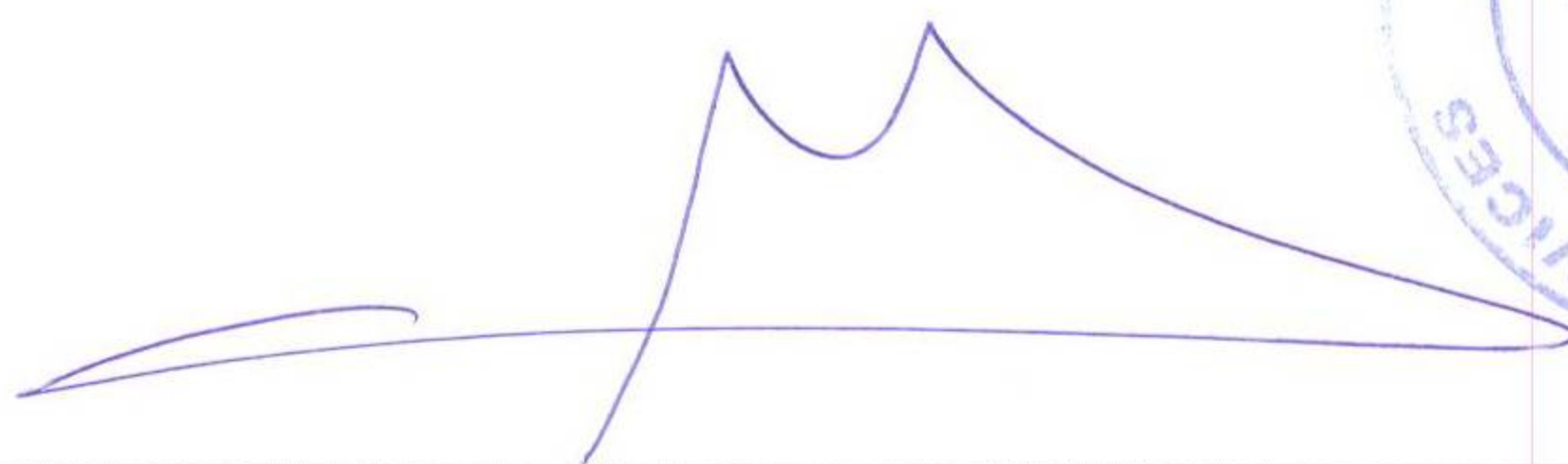
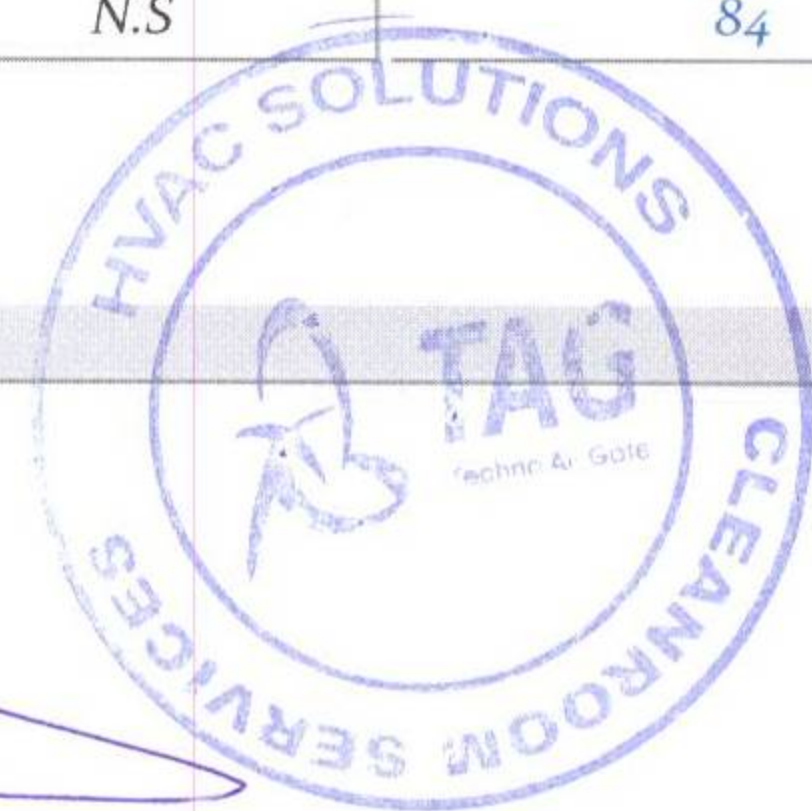
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Datasheet number 12.1.1.24 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |          |
|----------------------|--------------------------------|--------|----------|
| Unit No.             | Ex.AF 01 (Ex.AF-S-MF-01)       |        |          |
| Equipment Location   | Wall mounted fan               |        |          |
| Served Area          | STG Building/Mezzanine Floor   |        |          |
| Fan Manufacturer     | GREENHECK                      |        |          |
| Motor Manufacturer   | GREENHECK                      |        |          |
| Exhaust Air Fan      |                                |        |          |
| Fan                  | Specification                  | Design | Measured |
|                      | Exhaust Air Flow Rate (CMH)    | 96900  | 94096    |
|                      | Total static pressure (pa)     | 91.8   | N.A      |
|                      | Fan Speed (RPM)                | 750    | N.A      |
|                      | Fan Pulley size (mm)           | N.S    | N.A      |
| Motor                | Specification                  | Design | Measured |
|                      | Power (Kw)                     |        | 11       |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 21/22/21 |
|                      | Motor Speed (RPM)              | 750    | N.A      |
|                      | Motor Pulley size (mm)         | N.S    | N.A      |
|                      | Motor Body Temperature         | N.S    | 23°C     |
|                      | dB)noise                       | N.S    | 84       |

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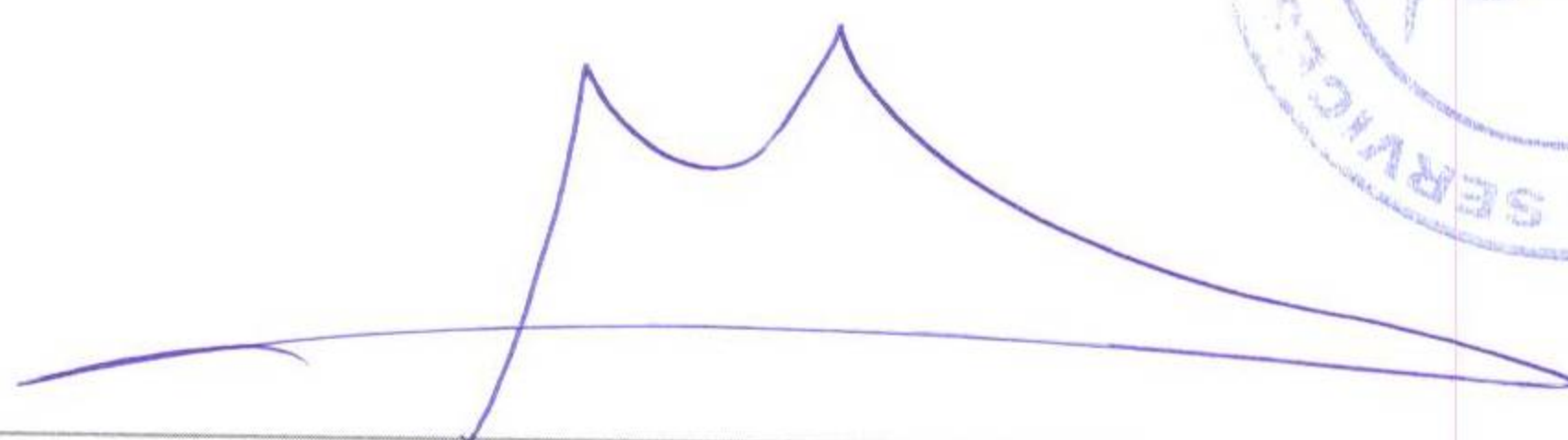
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Datasheet number 12.1.1.25 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |              |
|----------------------|--------------------------------|--------|--------------|
| Unit No.             | Ex.AF 02 (Ex.AF-S-MF-02)       |        |              |
| Equipment Location   | Wall mounted fan               |        |              |
| Served Area          | STG Building/Mezzanine Floor   |        |              |
| Fan Manufacturer     | GREENHECK                      |        |              |
| Motor Manufacturer   | GREENHECK                      |        |              |
| Exhaust Air Fan      |                                |        |              |
| Fan                  | Specification                  | Design | Measured     |
|                      | Exhaust Air Flow Rate (CMH)    | 96900  | 102782       |
|                      | Total static pressure (pa)     | 91.8   | N.A          |
|                      | Fan Speed (RPM)                | 750    | N.A          |
|                      | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor                | Specification                  | Design | Measured     |
|                      | Power (Kw)                     |        | 11           |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22.3/23/22.8 |
|                      | Motor Speed (RPM)              | 750    | N.A          |
|                      | Motor Pulley size (mm)         | N.S    | N.A          |
|                      | Motor Body Temperature         | N.S    | 23°C         |
|                      | dB)noise                       | N.S    | 88.5         |

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## Datasheet number 12.1.1.26 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |          |
|----------------------|--------------------------------|--------|----------|
| Unit No.             | Ex.AF 03 (Ex.AF-S-MF-03)       |        |          |
| Equipment Location   | Wall mounted fan               |        |          |
| Served Area          | STG Building/Mezzanine Floor   |        |          |
| Fan Manufacturer     | GREENHECK                      |        |          |
| Motor Manufacturer   | GREENHECK                      |        |          |
| Exhaust Air Fan      |                                |        |          |
| Fan                  | Specification                  | Design | Measured |
|                      | Exhaust Air Flow Rate (CMH)    | 96900  | 104230   |
|                      | Total static pressure (pa)     | 91.8   | N.A      |
|                      | Fan Speed (RPM)                | 750    | N.A      |
|                      | Fan Pulley size (mm)           | N.S    | N.A      |
| Motor                | Specification                  | Design | Measured |
|                      | Power (Kw)                     |        | 11       |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22/23/22 |
|                      | Motor Speed (RPM)              | 750    | N.A      |
|                      | Motor Pulley size (mm)         | N.S    | N.A      |
|                      | Motor Body Temperature         | N.S    | 23°C     |
|                      | dB)noise                       | N.S    | 90.5     |

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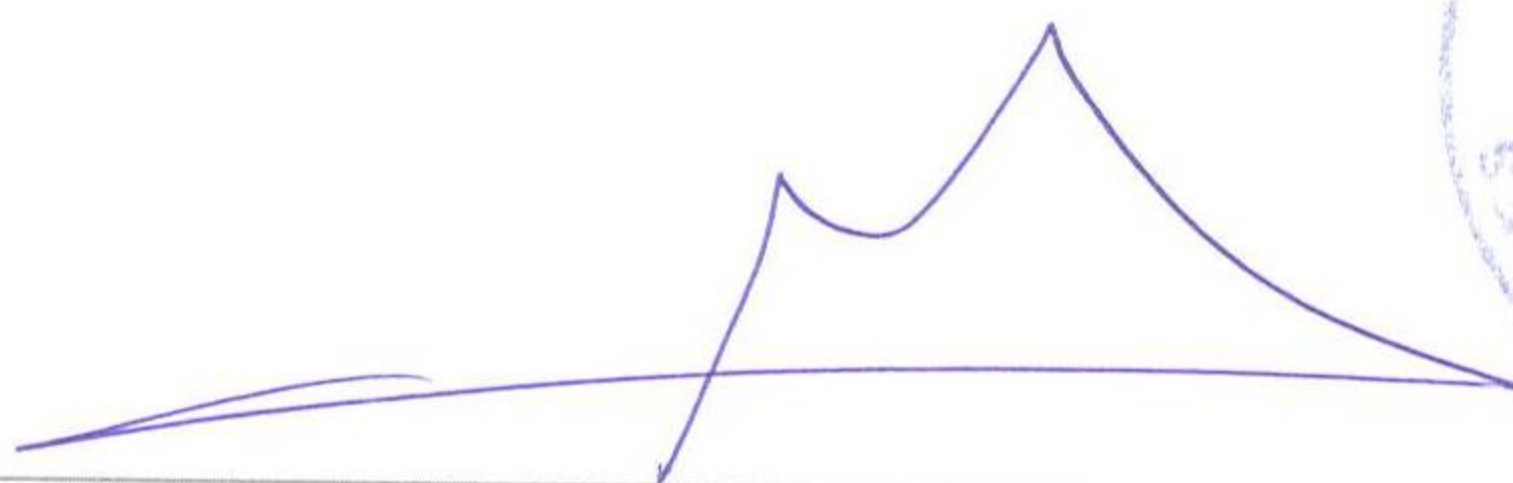
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Datasheet number 12.1.1.27 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |                |
|----------------------|--------------------------------|--------|----------------|
| Unit No.             | Ex.AF 04 (Ex.AF-S-MF-04)       |        |                |
| Equipment Location   | Wall mounted fan               |        |                |
| Served Area          | STG Building/Mezzanine Floor   |        |                |
| Fan Manufacturer     | GREENHECK                      |        |                |
| Motor Manufacturer   | GREENHECK                      |        |                |
| Exhaust Air Fan      |                                |        |                |
| Fan                  | Specification                  | Design | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 96900  | 106830         |
|                      | Total static pressure (pa)     | 91.8   | N.A            |
|                      | Fan Speed (RPM)                | 750    | N.A            |
|                      | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor                | Specification                  | Design | Measured       |
|                      | Power (Kw)                     |        | 11             |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22.3/22.1/22.2 |
|                      | Motor Speed (RPM)              | 750    | N.A            |
|                      | Motor Pulley size (mm)         | N.S    | N.A            |
|                      | Motor Body Temperature         | N.S    | 22°C           |
|                      | dB)noise                       | N.S    | 88.5           |

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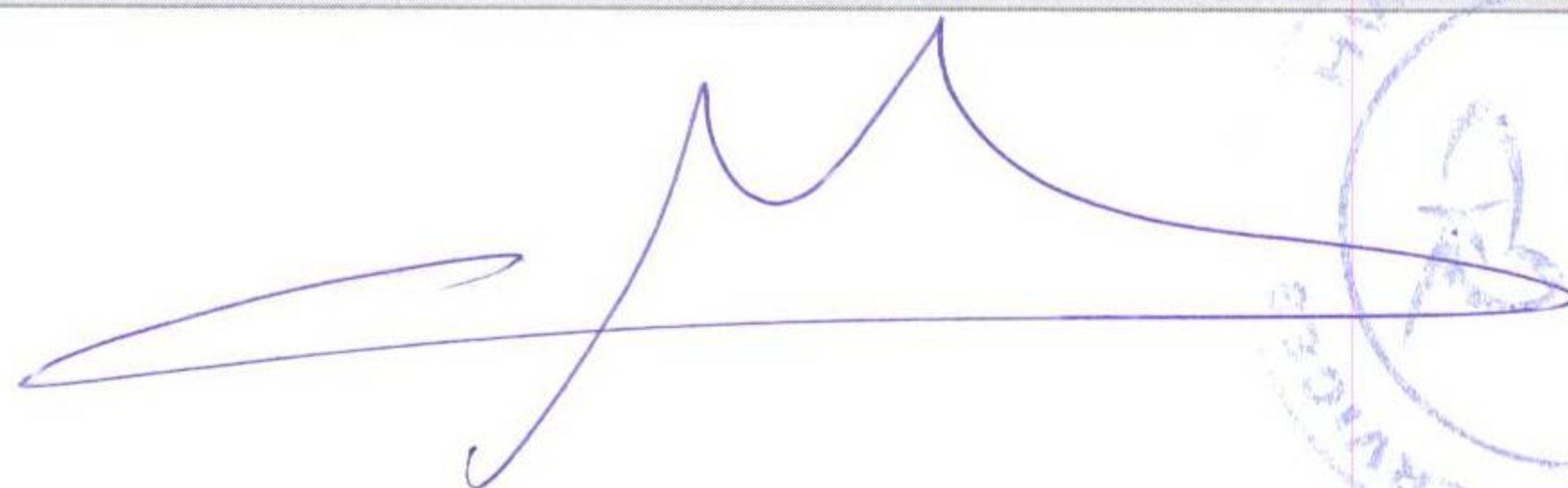
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Datasheet number 12.1.1.28 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |              |
|----------------------|--------------------------------|--------|--------------|
| Unit No.             | Ex.AF 05(Ex.AF-S-MF-05)        |        |              |
| Equipment Location   | Wall mounted fan               |        |              |
| Served Area          | STG Building/Mezzanine Floor   |        |              |
| Fan Manufacturer     | GREENHECK                      |        |              |
| Motor Manufacturer   | GREENHECK                      |        |              |
| Exhaust Air Fan      |                                |        |              |
| Fan                  | Specification                  | Design | Measured     |
|                      | Exhaust Air Flow Rate (CMH)    | 96900  | 99887        |
|                      | Total static pressure (pa)     | 91.8   | N.A          |
|                      | Fan Speed (RPM)                | 750    | N.A          |
|                      | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor                | Specification                  | Design | Measured     |
|                      | Power (Kw)                     |        | 11           |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 23.1/23/23.2 |
|                      | Motor Speed (RPM)              | 750    | N.A          |
|                      | Motor Pulley size (mm)         | N.S    | N.A          |
|                      | Motor Body Temperature         | N.S    | 22°C         |
|                      | dB)noise                       | N.S    | 87.5         |

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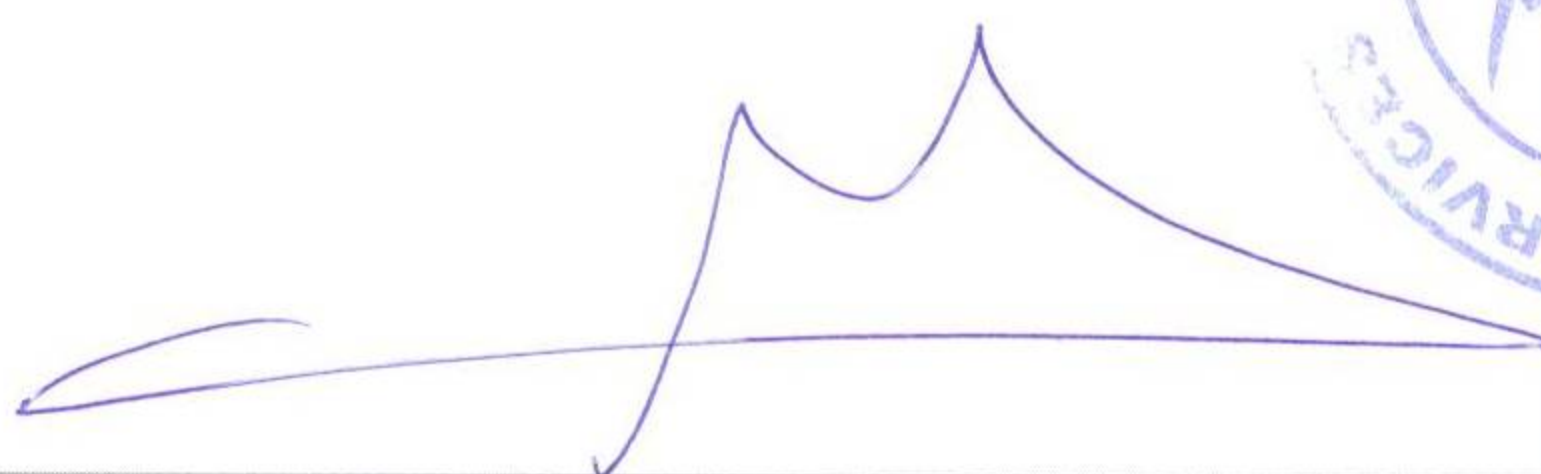
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Datasheet number 12.1.1.29 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |          |
|----------------------|--------------------------------|--------|----------|
| Unit No.             | Ex.AF o6 (Ex.AF-S-MF-o6)       |        |          |
| Equipment Location   | Wall mounted fan               |        |          |
| Served Area          | STG Building/Mezzanine Floor   |        |          |
| Fan Manufacturer     | GREENHECK                      |        |          |
| Motor Manufacturer   | GREENHECK                      |        |          |
| Exhaust Air Fan      |                                |        |          |
| Fan                  | Specification                  | Design | Measured |
|                      | Exhaust Air Flow Rate (CMH)    | 96900  | 106980   |
|                      | Total static pressure (pa)     | 91.8   | N.A      |
|                      | Fan Speed (RPM)                | 750    | N.A      |
|                      | Fan Pulley size (mm)           | N.S    | N.A      |
| Motor                | Specification                  | Design | Measured |
|                      | Power (Kw)                     |        | 11       |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22/23/22 |
|                      | Motor Speed (RPM)              | 750    | N.A      |
|                      | Motor Pulley size (mm)         | N.S    | N.A      |
|                      | Motor Body Temperature         | N.S    | 22°C     |
|                      | dB)noise                       | N.S    | 88.5     |

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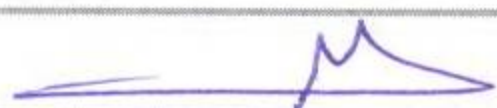


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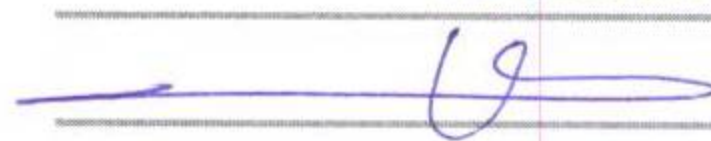


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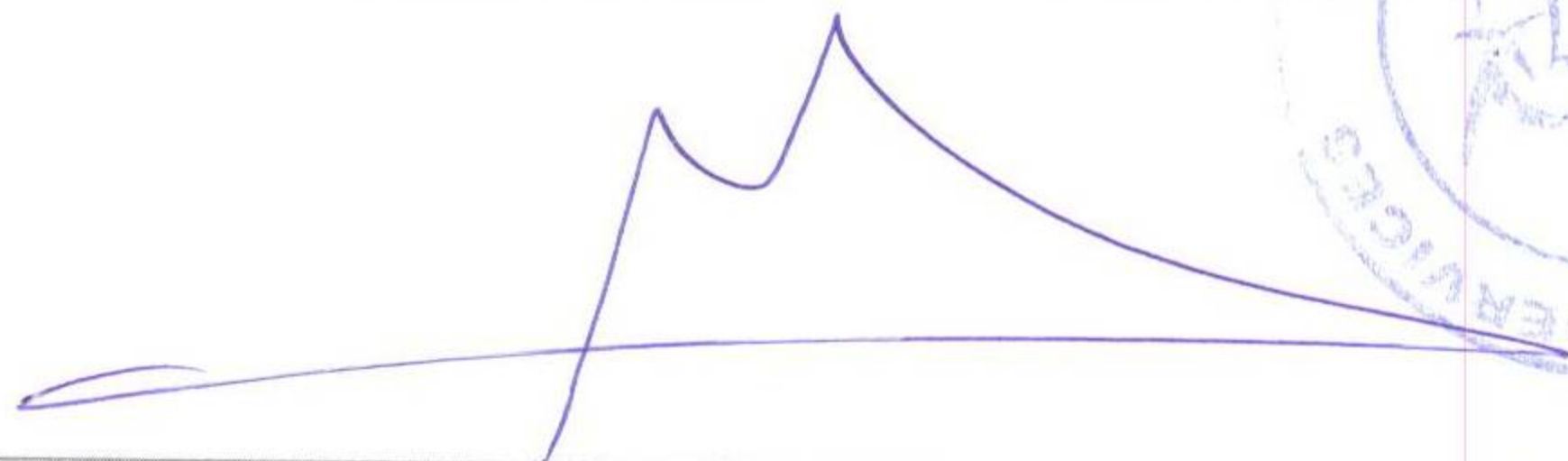
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Datasheet number 12.1.1.30 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |          |
|----------------------|--------------------------------|--------|----------|
| Unit No.             | Ex.AF 07 (Ex.AF-S-MF-07)       |        |          |
| Equipment Location   | Wall mounted fan               |        |          |
| Served Area          | STG Building/Mezzanine Floor   |        |          |
| Fan Manufacturer     | GREENHECK                      |        |          |
| Motor Manufacturer   | GREENHECK                      |        |          |
| Exhaust Air Fan      |                                |        |          |
| Fan                  | Specification                  | Design | Measured |
|                      | Exhaust Air Flow Rate (CMH)    | 96900  | 98730    |
|                      | Total static pressure (pa)     | 91.8   | N.A      |
|                      | Fan Speed (RPM)                | 750    | N.A      |
|                      | Fan Pulley size (mm)           | N.S    | N.A      |
| Motor                | Specification                  | Design | Measured |
|                      | Power (Kw)                     |        | 11       |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22/23/22 |
|                      | Motor Speed (RPM)              | 750    | N.A      |
|                      | Motor Pulley size (mm)         | N.S    | N.A      |
|                      | Motor Body Temperature         | N.S    | 21°C     |
|                      | dB)noise                       | N.S    | 85.5     |

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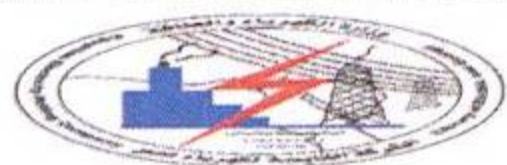
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**OPERATION FLOOR**

Datasheet number 12.1.1.31 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 01 (SAF-S-OP-01)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Operation Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 114250         |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A            |
|                     | Total static pressure (pa)     | 268.8  | 260            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 34.2/34.2/34.4 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 22°C           |
|                     | dB)noise                       | N.S    | 101            |

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## Datasheet number 12.1.1.32 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |              |
|---------------------|--------------------------------|--------|--------------|
| Unit No.            | SAF 02 (SAF-S-OP-02)           |        |              |
| Equipment Location  | Wall mounted fan               |        |              |
| Served Area         | STG Building/Operation Floor   |        |              |
| Fan Manufacturer    | GREENHECK                      |        |              |
| Motor Manufacturer  | GREENHECK                      |        |              |
| Supply Air Fan      |                                |        |              |
| Fan                 | Specification                  | Design | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 113820       |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A          |
|                     | Total static pressure (pa)     | 268.8  | 265          |
|                     | Fan Speed (RPM)                | 750    | N.A          |
|                     | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor               | Specification                  | Design | Measured     |
|                     | Power (Kw)                     |        | 18.5         |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 35/34.8/34.7 |
|                     | Motor Speed (RPM)              | 750    | N.A          |
|                     | Motor Pulley size (mm)         | N.S    | N.A          |
|                     | Motor Body Temperature         | N.S    | 23°C         |
|                     | dB)noise                       | N.S    | 103          |

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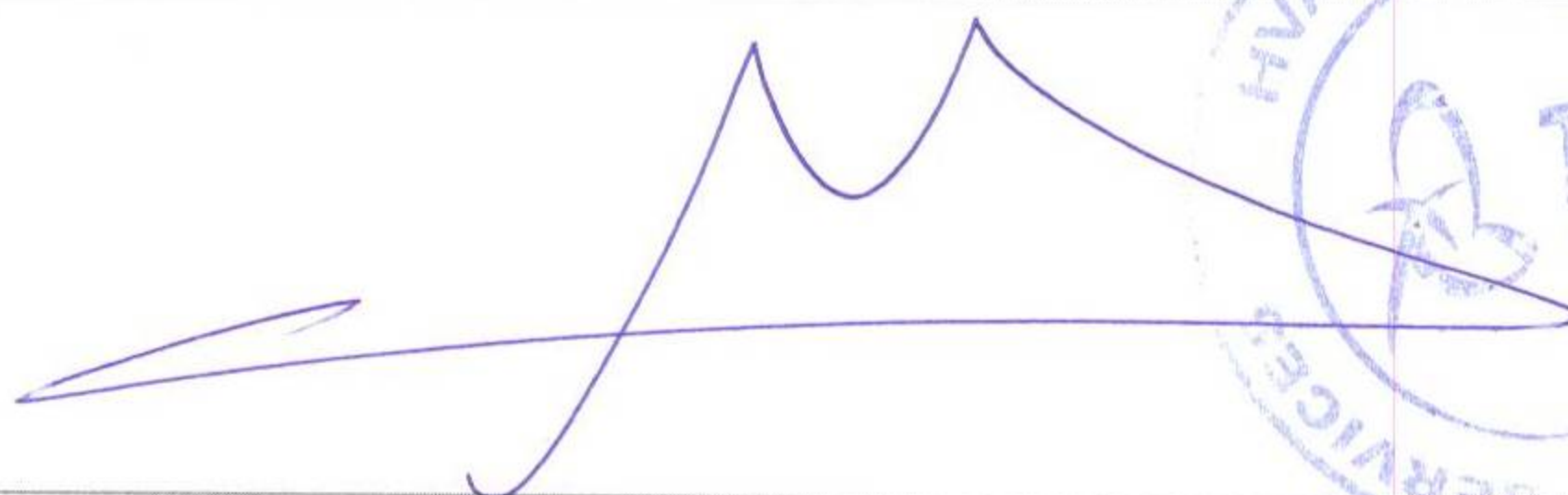
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## Datasheet number 12.1.1.33 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |              |
|---------------------|--------------------------------|--------|--------------|
| Unit No.            | SAF 03 (SAF-S-OP-03)           |        |              |
| Equipment Location  | Wall mounted fan               |        |              |
| Served Area         | STG Building/Operation Floor   |        |              |
| Fan Manufacturer    | GREENHECK                      |        |              |
| Motor Manufacturer  | GREENHECK                      |        |              |
| Supply Air Fan      |                                |        |              |
| Fan                 | Specification                  | Design | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 114110       |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A          |
|                     | Total static pressure (pa)     | 268.8  | 260          |
|                     | Fan Speed (RPM)                | 750    | N.A          |
|                     | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor               | Specification                  | Design | Measured     |
|                     | Power (Kw)                     |        | 18.5         |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 35/34.8/34.7 |
|                     | Motor Speed (RPM)              | 750    | N.A          |
|                     | Motor Pulley size (mm)         | N.S    | N.A          |
|                     | Motor Body Temperature         | N.S    | 23°C         |
|                     | dB)noise                       | N.S    | 103.5        |

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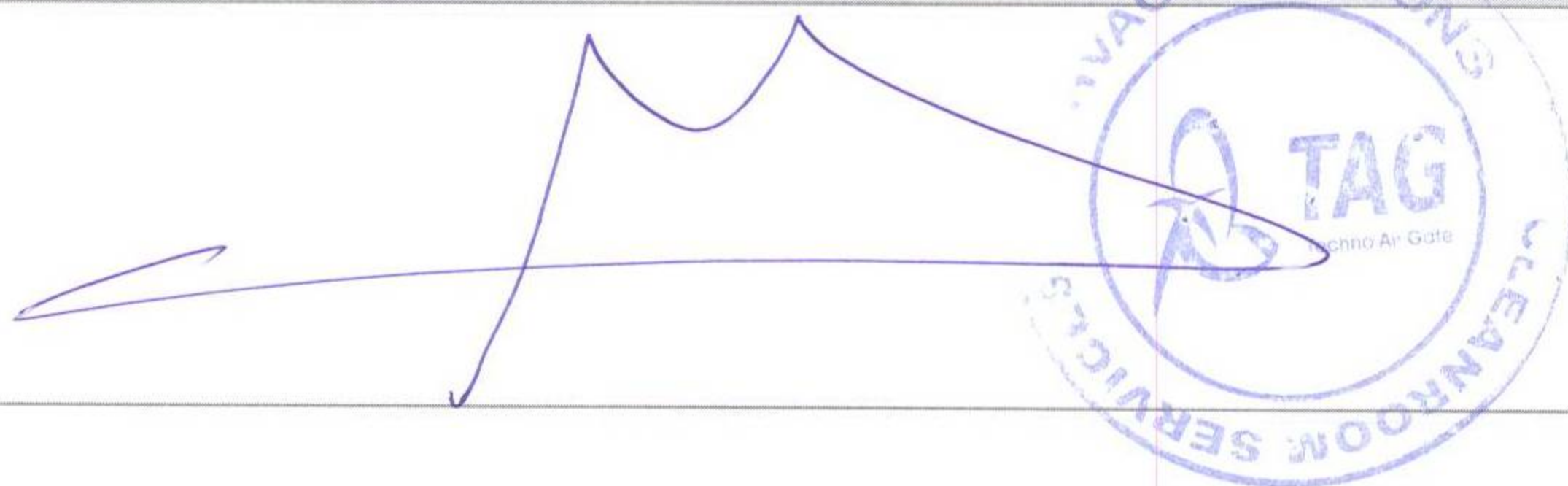
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## Datasheet number 12.1.1.34 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 04 (SAF-S-OP-04)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Operation Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 113890         |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A            |
|                     | Total static pressure (pa)     | 268.8  | 258            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 37.2/36.6/36.3 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 23°C           |
|                     | dB)noise                       | N.S    | 101.5          |

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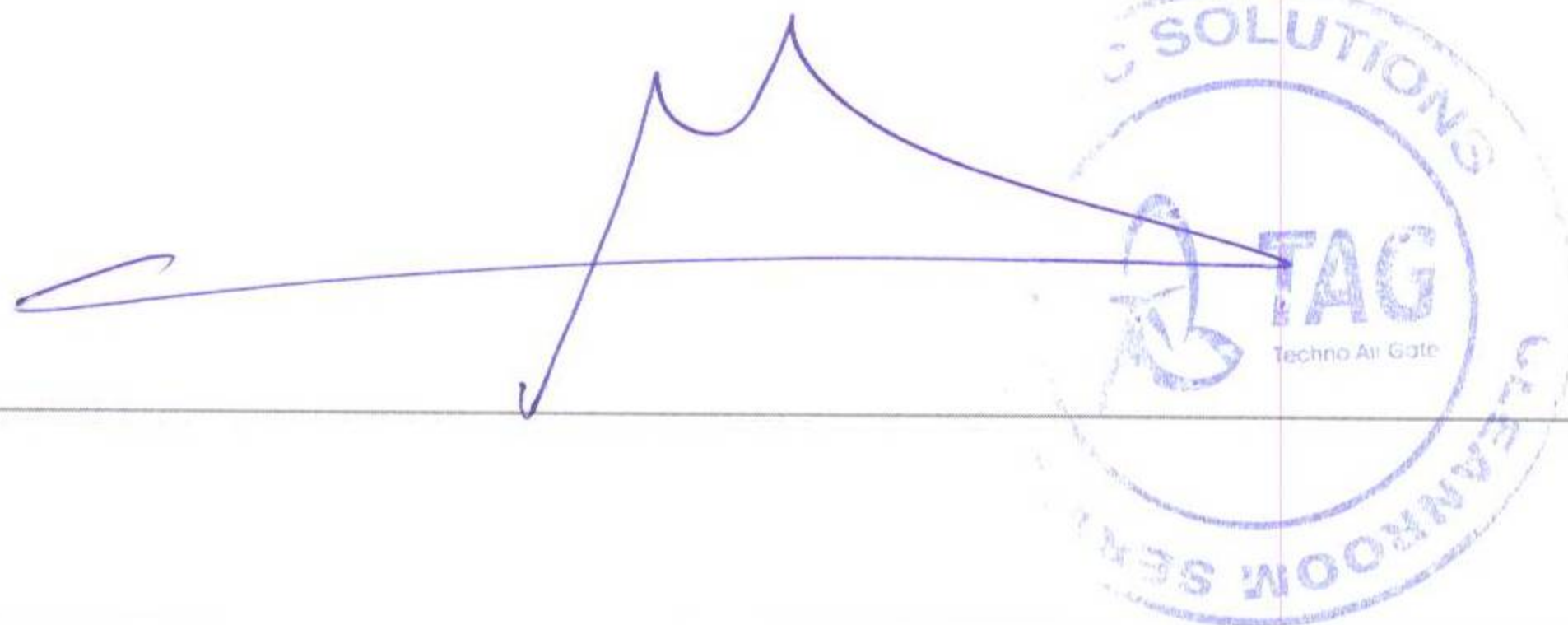
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Datasheet number 12.1.1.35 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |            |
|---------------------|--------------------------------|--------|------------|
| Unit No.            | SAF 05(SAF-S-OP-05)            |        |            |
| Equipment Location  | Wall mounted fan               |        |            |
| Served Area         | STG Building/Operation Floor   |        |            |
| Fan Manufacturer    | GREENHECK                      |        |            |
| Motor Manufacturer  | GREENHECK                      |        |            |
| Supply Air Fan      |                                |        |            |
| Fan                 | Specification                  | Design | Measured   |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 112916     |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A        |
|                     | Total static pressure (pa)     | 268.8  | 260        |
|                     | Fan Speed (RPM)                | 750    | N.A        |
|                     | Fan Pulley size (mm)           | N.S    | N.A        |
| Motor               | Specification                  | Design | Measured   |
|                     | Power (Kw)                     |        | 18.5       |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50   |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 36/37/36.9 |
|                     | Motor Speed (RPM)              | 750    | N.A        |
|                     | Motor Pulley size (mm)         | N.S    | N.A        |
|                     | Motor Body Temperature         | N.S    | 24°C       |
|                     | dB)noise                       | N.S    | 101.5      |

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## Datasheet number 12.1.1.36 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF o6 (SAF-S-OP-o6)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Operation Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 114305         |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A            |
|                     | Total static pressure (pa)     | 268.8  | 255            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 33.2/33.9/33.8 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 23°C           |
|                     | dB)noise                       | N.S    | 104.5          |

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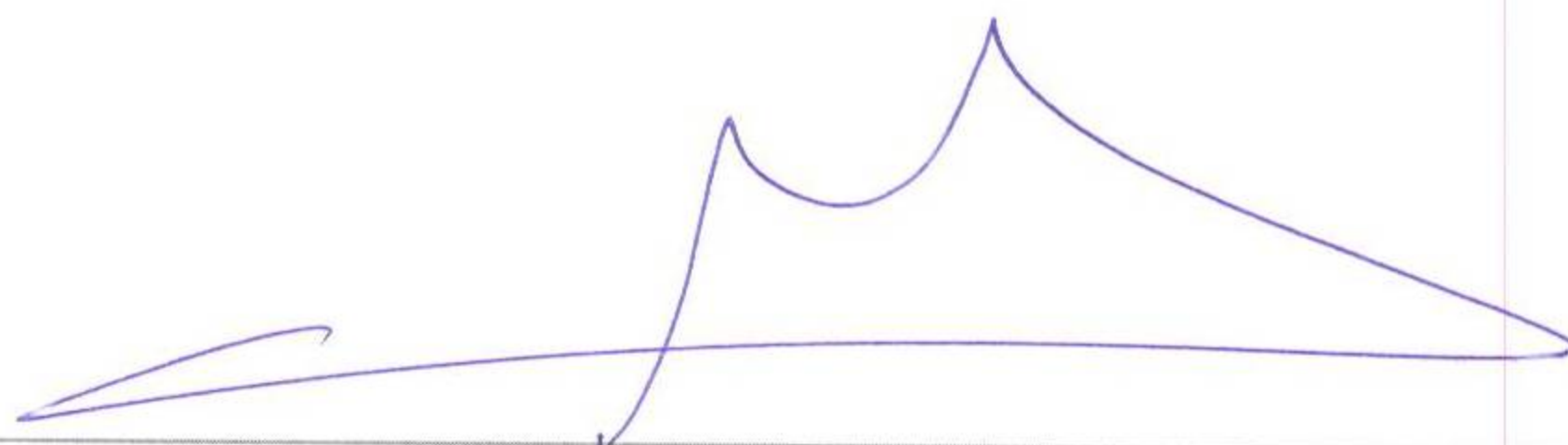
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Datasheet number 12.1.1.37 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |              |
|---------------------|--------------------------------|--------|--------------|
| Unit No.            | SAF 07(SAF-S-OP-07)            |        |              |
| Equipment Location  | Wall mounted fan               |        |              |
| Served Area         | STG Building/Operation Floor   |        |              |
| Fan Manufacturer    | GREENHECK                      |        |              |
| Motor Manufacturer  | GREENHECK                      |        |              |
| Supply Air Fan      |                                |        |              |
| Fan                 | Specification                  | Design | Measured     |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 114255       |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A          |
|                     | Total static pressure (pa)     | 268.8  | 260          |
|                     | Fan Speed (RPM)                | 750    | N.A          |
|                     | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor               | Specification                  | Design | Measured     |
|                     | Power (Kw)                     |        | 18.5         |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 33/33.2/33.4 |
|                     | Motor Speed (RPM)              | 750    | N.A          |
|                     | Motor Pulley size (mm)         | N.S    | N.A          |
|                     | Motor Body Temperature         | N.S    | 22°C         |
|                     | dB)noise                       | N.S    | 102.5        |

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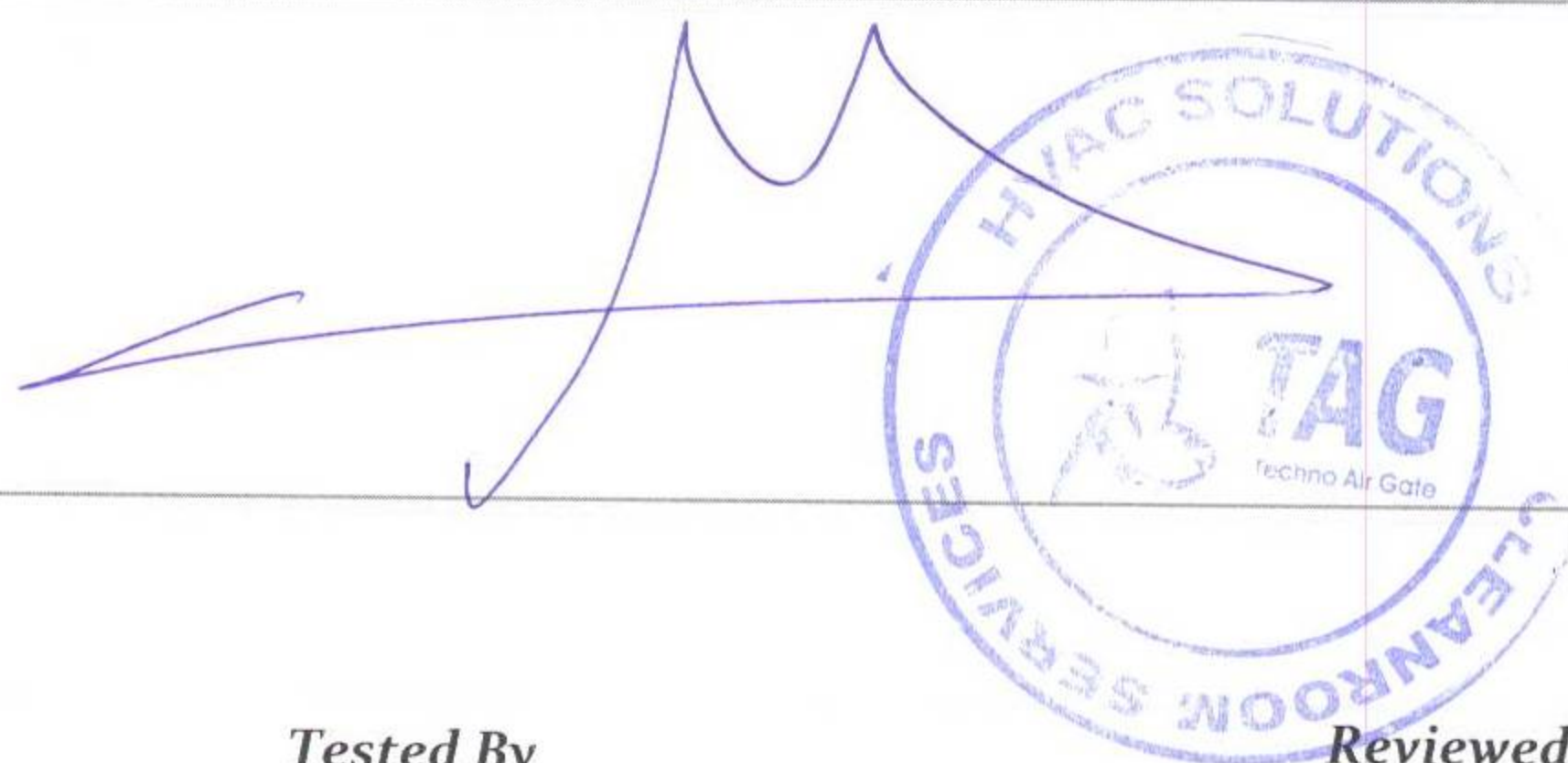
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## Datasheet number 12.1.1.38 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF o8 (SAF-S-OP-o8)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Operation Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 114364         |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A            |
|                     | Total static pressure (pa)     | 268.8  | 260            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 33.8/34.8/34.6 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 21°C           |
|                     | dB)noise                       | N.S    | 101.5          |

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Datasheet number 12.1.1.39 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 09 (SAF-S-OP-09)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Operation Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 114995         |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A            |
|                     | Total static pressure (pa)     | 268.8  | 265            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 33.9/33.7/34.2 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 22°C           |
|                     | dB)noise                       | N.S    | 100.5          |

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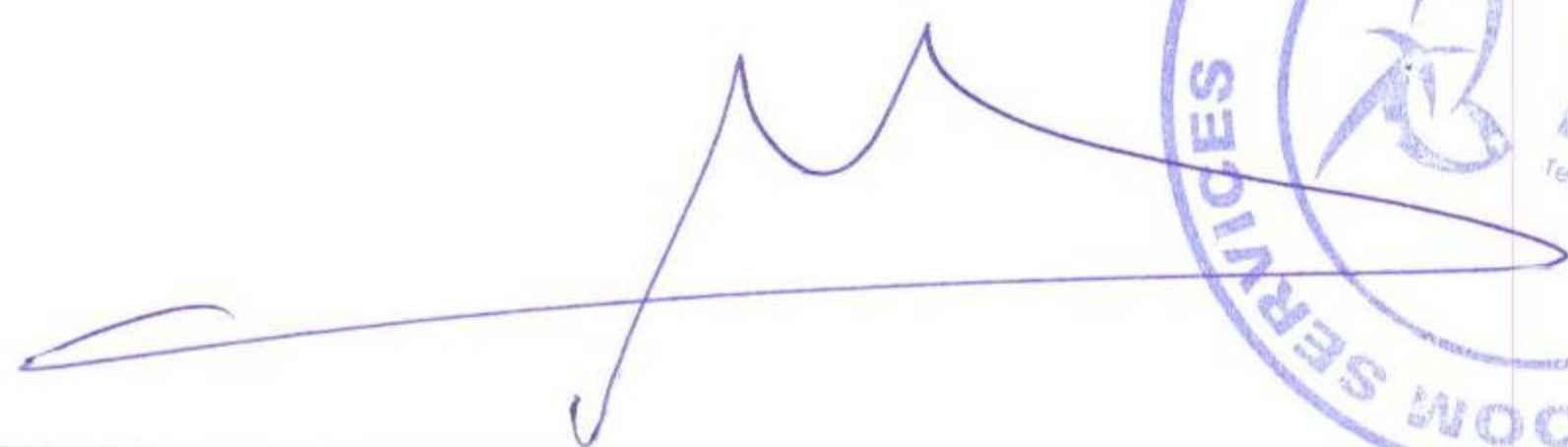
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## Datasheet number 12.1.1.40 Supply Air Fan measurements

| Supply Air Fan DATA |                                |        |                |
|---------------------|--------------------------------|--------|----------------|
| Unit No.            | SAF 10 (SAF-S-OP-10)           |        |                |
| Equipment Location  | Wall mounted fan               |        |                |
| Served Area         | STG Building/Operation Floor   |        |                |
| Fan Manufacturer    | GREENHECK                      |        |                |
| Motor Manufacturer  | GREENHECK                      |        |                |
| Supply Air Fan      |                                |        |                |
| Fan                 | Specification                  | Design | Measured       |
|                     | Supply Air Flow Rate (CMH)     | 103700 | 114988         |
|                     | Fresh Air Flow Rate (CMH)      | 103700 | N.A            |
|                     | Total static pressure (pa)     | 268.8  | 255            |
|                     | Fan Speed (RPM)                | 750    | N.A            |
|                     | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor               | Specification                  | Design | Measured       |
|                     | Power (Kw)                     |        | 18.5           |
|                     | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                     | Average current(L1/L2/L3)(Amp) | N.S    | 35.2/35.4/35.3 |
|                     | Motor Speed (RPM)              | 750    | N.A            |
|                     | Motor Pulley size (mm)         | N.S    | N.A            |
|                     | Motor Body Temperature         | N.S    | 22°C           |
|                     | dB)noise                       | N.S    | 99.5           |

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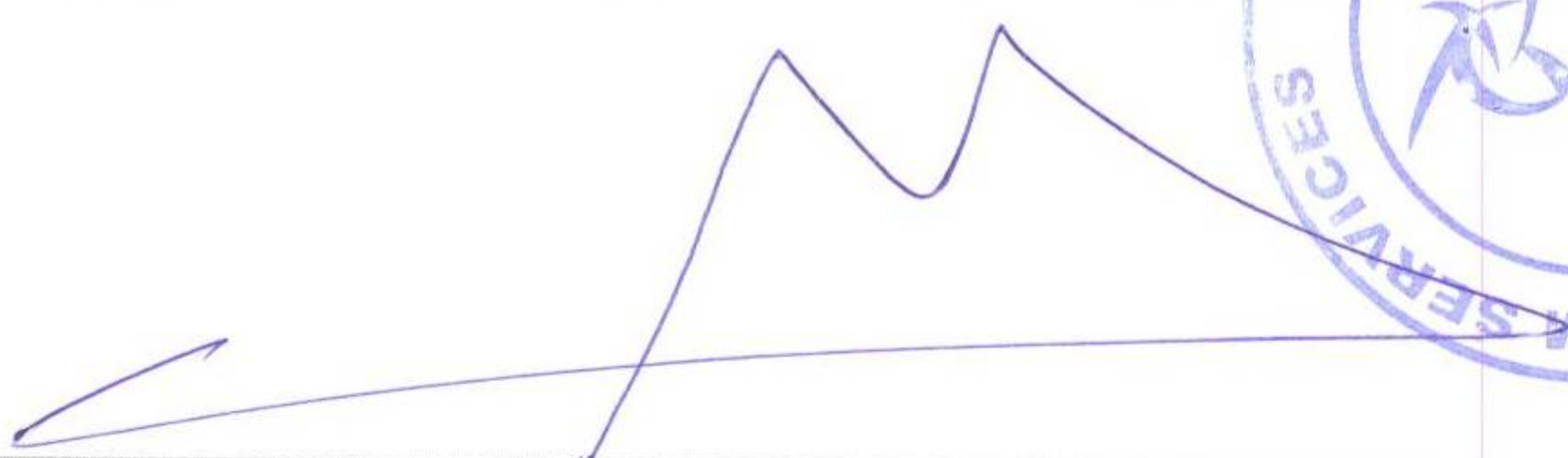
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Datasheet number 12.1.1.41 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |              |
|----------------------|--------------------------------|--------|--------------|
| Unit No.             | Ex.AF 01 (Ex.AF-S-OP-01)       |        |              |
| Equipment Location   | Wall mounted fan               |        |              |
| Served Area          | STG Building/Operation Floor   |        |              |
| Fan Manufacturer     | GREENHECK                      |        |              |
| Motor Manufacturer   | GREENHECK                      |        |              |
| Exhaust Air Fan      |                                |        |              |
| Fan                  | Specification                  | Design | Measured     |
|                      | Exhaust Air Flow Rate (CMH)    | 103700 | 106677       |
|                      | Total static pressure (pa)     | 91.5   | N.A          |
|                      | Fan Speed (RPM)                | 750    | N.A          |
|                      | Fan Pulley size (mm)           | N.S    | N.A          |
| Motor                | Specification                  | Design | Measured     |
|                      | Power (Kw)                     |        | 11           |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50     |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 21.6/24/22.1 |
|                      | Motor Speed (RPM)              | 750    | N.A          |
|                      | Motor Pulley size (mm)         | N.S    | N.A          |
|                      | Motor Body Temperature         | N.S    | 21°C         |
|                      | dB)noise                       | N.S    | 104          |

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Datasheet number 12.1.1.42 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |            |
|----------------------|--------------------------------|--------|------------|
| Unit No.             | Ex.AF 02 (Ex.AF-S-OP-02)       |        |            |
| Equipment Location   | Wall mounted fan               |        |            |
| Served Area          | STG Building/Operation Floor   |        |            |
| Fan Manufacturer     | GREENHECK                      |        |            |
| Motor Manufacturer   | GREENHECK                      |        |            |
| Exhaust Air Fan      |                                |        |            |
| Fan                  | Specification                  | Design | Measured   |
|                      | Exhaust Air Flow Rate (CMH)    | 103700 | 108462     |
|                      | Total static pressure (pa)     | 91.5   | N.A        |
|                      | Fan Speed (RPM)                | 750    | N.A        |
|                      | Fan Pulley size (mm)           | N.S    | N.A        |
| Motor                | Specification                  | Design | Measured   |
|                      | Power (Kw)                     |        | 11         |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50   |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 21.9/24/22 |
|                      | Motor Speed (RPM)              | 750    | N.A        |
|                      | Motor Pulley size (mm)         | N.S    | N.A        |
|                      | Motor Body Temperature         | N.S    | 22°C       |
|                      | dB)noise                       | N.S    | 103        |

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## Datasheet number 12.1.1.43 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |                |
|----------------------|--------------------------------|--------|----------------|
| Unit No.             | Ex.AF 03 (Ex.AF-S-OP-03)       |        |                |
| Equipment Location   | Wall mounted fan               |        |                |
| Served Area          | STG Building/Operation Floor   |        |                |
| Fan Manufacturer     | GREENHECK                      |        |                |
| Motor Manufacturer   | GREENHECK                      |        |                |
| Exhaust Air Fan      |                                |        |                |
| Fan                  | Specification                  | Design | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 103700 | 108953         |
|                      | Total static pressure (pa)     | 91.5   | N.A            |
|                      | Fan Speed (RPM)                | 750    | N.A            |
|                      | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor                | Specification                  | Design | Measured       |
|                      | Power (Kw)                     |        | 11             |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22.4/24.2/21.8 |
|                      | Motor Speed (RPM)              | 750    | N.A            |
|                      | Motor Pulley size (mm)         | N.S    | N.A            |
|                      | Motor Body Temperature         | N.S    | 21°C           |
|                      | dB)noise                       | N.S    | 103            |

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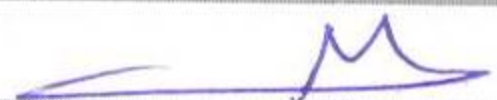
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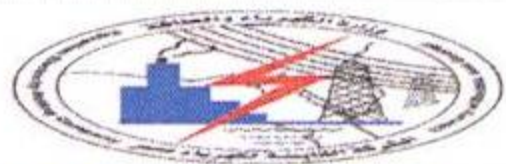



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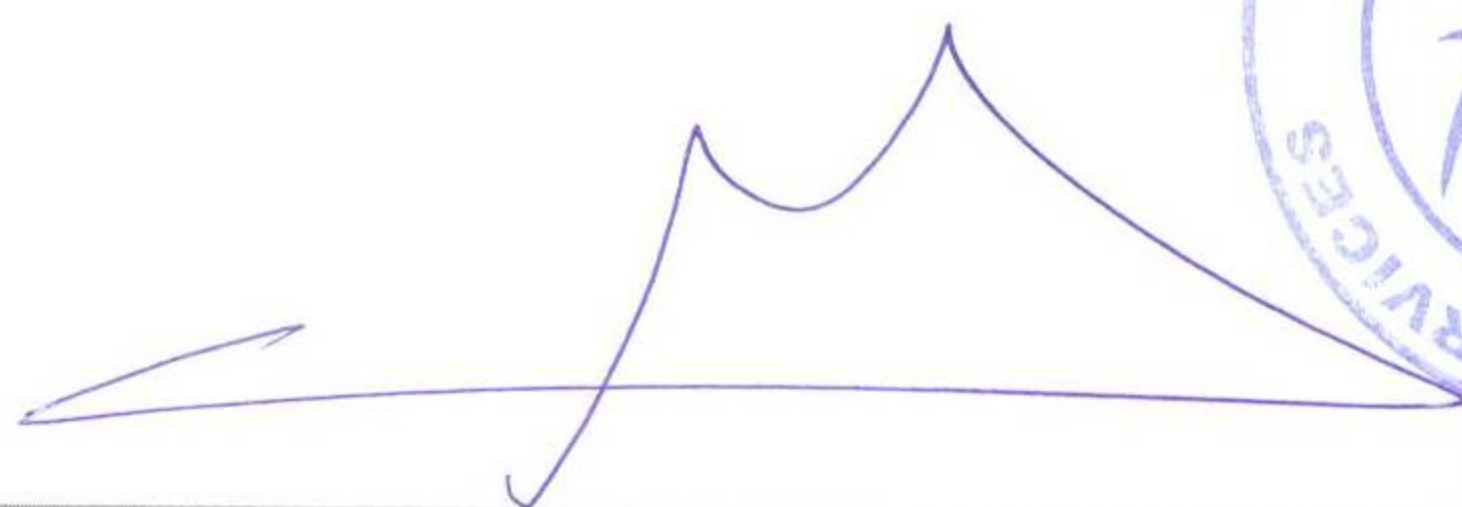
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Datasheet number 12.1.1.44 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |                              |                |
|----------------------|--------------------------------|------------------------------|----------------|
| Unit No.             |                                | Ex.AF 04 (Ex.AF-S-OP-04)     |                |
| Equipment Location   |                                | Wall mounted fan             |                |
| Served Area          |                                | STG Building/Operation Floor |                |
| Fan Manufacturer     |                                | GREENHECK                    |                |
| Motor Manufacturer   |                                | GREENHECK                    |                |
| Exhaust Air Fan      |                                |                              |                |
| Fan                  | Specification                  | Design                       | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 103700                       | 108460         |
|                      | Total static pressure (pa)     | 91.5                         | N.A            |
|                      | Fan Speed (RPM)                | 750                          | N.A            |
|                      | Fan Pulley size (mm)           | N.S                          | N.A            |
| Motor                | Specification                  | Design                       | Measured       |
|                      | Power (Kw)                     |                              | 11             |
|                      | Power supply (Volt/Ph/Hz)      |                              | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S                          | 21.6/23.5/21.1 |
|                      | Motor Speed (RPM)              | 750                          | N.A            |
|                      | Motor Pulley size (mm)         | N.S                          | N.A            |
|                      | Motor Body Temperature         | N.S                          | 22°C           |
|                      | dB)noise                       | N.S                          | 101            |

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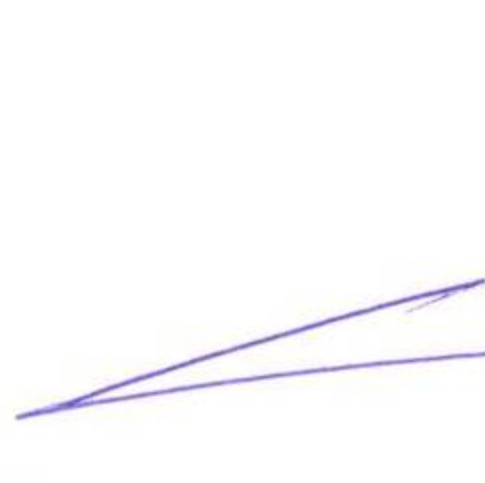
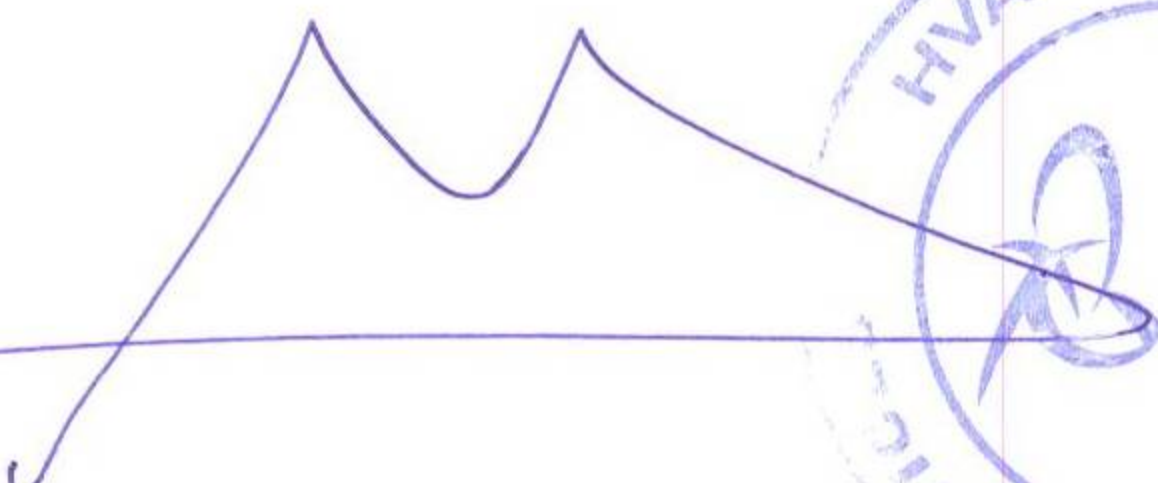
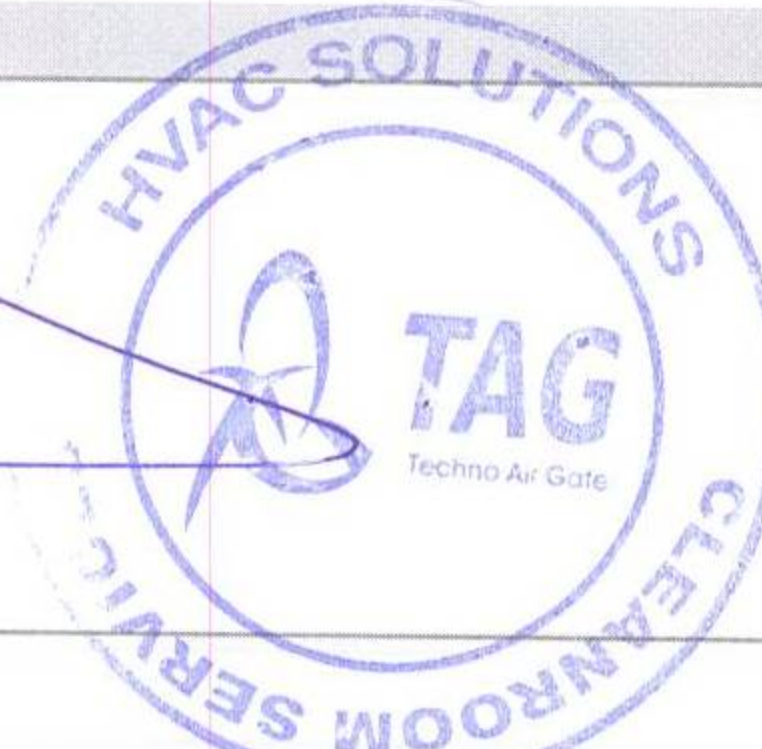
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Datasheet number 12.1.1.45 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |                              |                |
|----------------------|--------------------------------|------------------------------|----------------|
| Unit No.             |                                | Ex.AF 05 (Ex.AF-S-OP-05)     |                |
| Equipment Location   |                                | Wall mounted fan             |                |
| Served Area          |                                | STG Building/Operation Floor |                |
| Fan Manufacturer     |                                | GREENHECK                    |                |
| Motor Manufacturer   |                                | GREENHECK                    |                |
| Exhaust Air Fan      |                                |                              |                |
| Fan                  | Specification                  | Design                       | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 103700                       | 108885         |
|                      | Total static pressure (pa)     | 91.5                         | N.A            |
|                      | Fan Speed (RPM)                | 750                          | N.A            |
|                      | Fan Pulley size (mm)           | N.S                          | N.A            |
| Motor                | Specification                  | Design                       | Measured       |
|                      | Power (Kw)                     |                              | 11             |
|                      | Power supply (Volt/Ph/Hz)      |                              | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S                          | 22.4/24.3/21.9 |
|                      | Motor Speed (RPM)              | 750                          | N.A            |
|                      | Motor Pulley size (mm)         | N.S                          | N.A            |
|                      | Motor Body Temperature         | N.S                          | 21°C           |
|                      | dB)noise                       | N.S                          | 103            |

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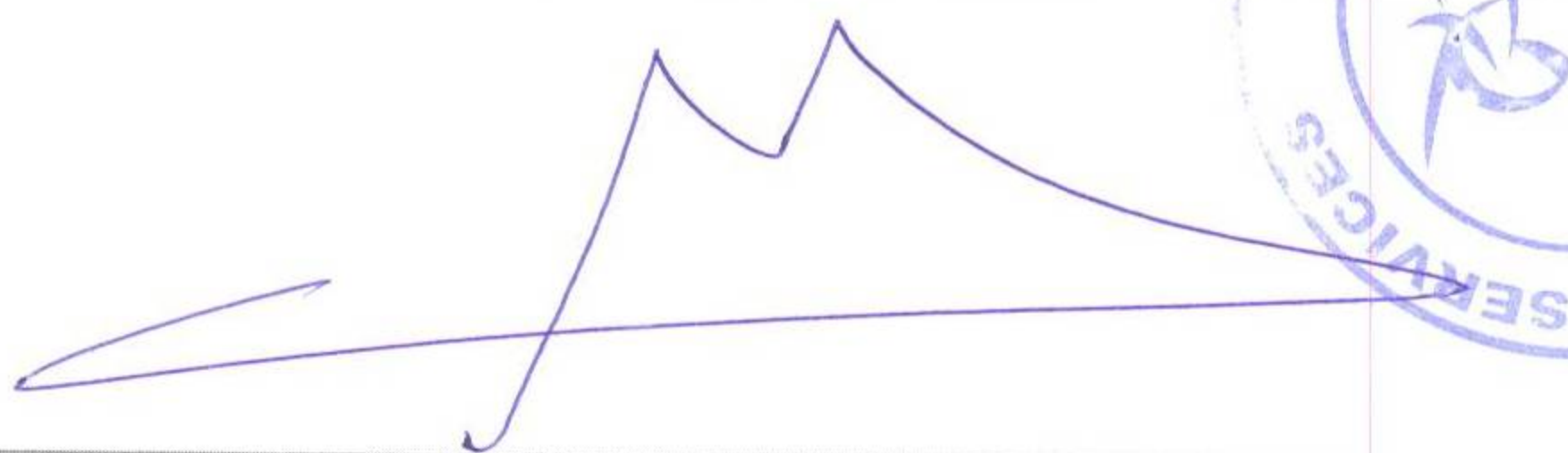
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Datasheet number 12.1.1.46 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |        |                |
|----------------------|--------------------------------|--------|----------------|
| Unit No.             | Ex.AF o6 (Ex.AF-S-OP-o6)       |        |                |
| Equipment Location   | Wall mounted fan               |        |                |
| Served Area          | STG Building/Operation Floor   |        |                |
| Fan Manufacturer     | GREENHECK                      |        |                |
| Motor Manufacturer   | GREENHECK                      |        |                |
| Exhaust Air Fan      |                                |        |                |
| Fan                  | Specification                  | Design | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 103700 | 111350         |
|                      | Total static pressure (pa)     | 91.5   | N.A            |
|                      | Fan Speed (RPM)                | 750    | N.A            |
|                      | Fan Pulley size (mm)           | N.S    | N.A            |
| Motor                | Specification                  | Design | Measured       |
|                      | Power (Kw)                     |        | 11             |
|                      | Power supply (Volt/Ph/Hz)      |        | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S    | 22.4/24.3/21.9 |
|                      | Motor Speed (RPM)              | 750    | N.A            |
|                      | Motor Pulley size (mm)         | N.S    | N.A            |
|                      | Motor Body Temperature         | N.S    | 22°C           |
|                      | dB)noise                       | N.S    | 104            |

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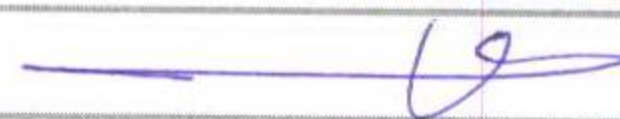
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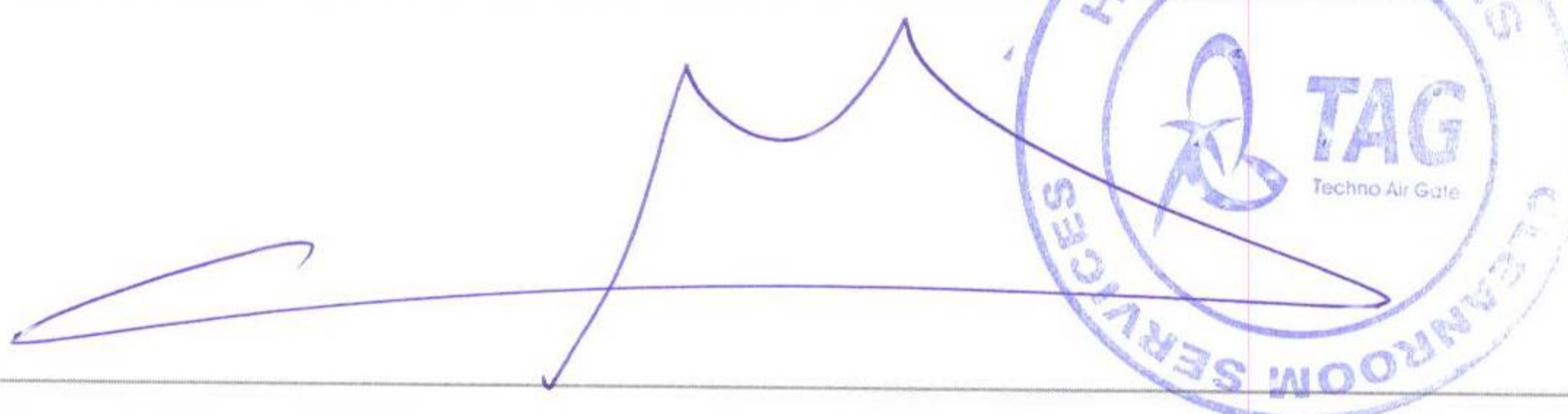
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Datasheet number 12.1.1.47 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |                              |                |
|----------------------|--------------------------------|------------------------------|----------------|
| Unit No.             |                                | Ex.AF 07 (Ex.AF-S-OP-07)     |                |
| Equipment Location   |                                | Wall mounted fan             |                |
| Served Area          |                                | STG Building/Operation Floor |                |
| Fan Manufacturer     |                                | GREENHECK                    |                |
| Motor Manufacturer   |                                | GREENHECK                    |                |
| Exhaust Air Fan      |                                |                              |                |
| Fan                  | Specification                  | Design                       | Measured       |
|                      | Exhaust Air Flow Rate (CMH)    | 103700                       | 110298         |
|                      | Total static pressure (pa)     | 91.5                         | N.A            |
|                      | Fan Speed (RPM)                | 750                          | N.A            |
|                      | Fan Pulley size (mm)           | N.S                          | N.A            |
| Motor                | Specification                  | Design                       | Measured       |
|                      | Power (Kw)                     |                              | 11             |
|                      | Power supply (Volt/Ph/Hz)      |                              | 400/3/50       |
|                      | Average current(L1/L2/L3)(Amp) | N.S                          | 22.4/24.1/21.6 |
|                      | Motor Speed (RPM)              | 750                          | N.A            |
|                      | Motor Pulley size (mm)         | N.S                          | N.A            |
|                      | Motor Body Temperature         | N.S                          | 21°C           |
|                      | dB)noise                       | N.S                          | 101            |

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# HVAC TESTING, ADJUSTING & BALANCING REPORT



Mar., 2018

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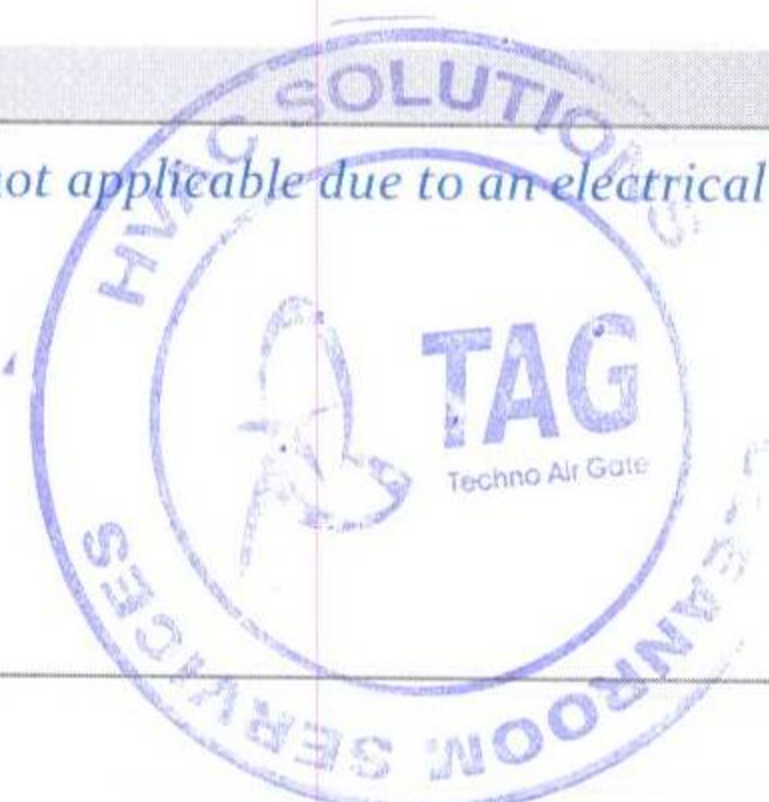
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Datasheet number 12.1.1.48 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |                              |          |
|----------------------|--------------------------------|------------------------------|----------|
| Unit No.             |                                | Ex.AF 08(Ex.AF-S-OP-08)      |          |
| Equipment Location   |                                | Wall mounted fan             |          |
| Served Area          |                                | STG Building/Operation Floor |          |
| Fan Manufacturer     |                                | GREENHECK                    |          |
| Motor Manufacturer   |                                | GREENHECK                    |          |
| Exhaust Air Fan      |                                |                              |          |
| Fan                  | Specification                  | Design                       | Measured |
|                      | Exhaust Air Flow Rate (CMH)    | 103700                       | N.A      |
|                      | Total static pressure (pa)     | 91.5                         | N.A      |
|                      | Fan Speed (RPM)                | 750                          | N.A      |
|                      | Fan Pulley size (mm)           | N.S                          | N.A      |
| Motor                | Specification                  | Design                       | Measured |
|                      | Power (Kw)                     |                              | 11       |
|                      | Power supply (Volt/Ph/Hz)      |                              | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) | N.S                          | N.A      |
|                      | Motor Speed (RPM)              | 750                          | N.A      |
|                      | Motor Pulley size (mm)         | N.S                          | N.A      |
|                      | Motor Body Temperature         | N.S                          | N.A      |
|                      | dB)noise                       | N.S                          | N.A      |

**NOTES:**

1- For Ex.AF 08 (Ex.AF-S-OP-08),measurements were not applicable due to an electrical problem.



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Datasheet number 12.1.1.49 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |                              |        |          |
|----------------------|--------------------------------|------------------------------|--------|----------|
| Unit No.             |                                | Ex.AF 09(Ex.AF-S-OP-09)      |        |          |
| Equipment Location   |                                | Wall mounted fan             |        |          |
| Served Area          |                                | STG Building/Operation Floor |        |          |
| Fan Manufacturer     |                                | GREENHECK                    |        |          |
| Motor Manufacturer   |                                | GREENHECK                    |        |          |
| Exhaust Air Fan      |                                |                              |        |          |
| Fan                  | Specification                  |                              | Design | Measured |
|                      | Exhaust Air Flow Rate (CMH)    |                              | 103700 | N.A      |
|                      | Total static pressure (pa)     |                              | 91.5   | N.A      |
|                      | Fan Speed (RPM)                |                              | 750    | N.A      |
|                      | Fan Pulley size (mm)           |                              | N.S    | N.A      |
| Motor                | Specification                  |                              | Design | Measured |
|                      | Power (Kw)                     |                              |        | 11       |
|                      | Power supply (Volt/Ph/Hz)      |                              |        | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) |                              | N.S    | N.A      |
|                      | Motor Speed (RPM)              |                              | 750    | N.A      |
|                      | Motor Pulley size (mm)         |                              | N.S    | N.A      |
|                      | Motor Body Temperature         |                              | N.S    | N.A      |
|                      | dB)noise                       |                              | N.S    | N.A      |

**NOTES:**

1- For Ex.AF 09 (Ex.AF-S-OP-09), measurements were not applicable due to an electrical problem.



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Datasheet number 12.1.1.50 Exhaust Air Fan measurements

| Exhaust Air Fan DATA |                                |                              |          |
|----------------------|--------------------------------|------------------------------|----------|
| Unit No.             |                                | Ex.AF 10(Ex.AF-S-OP-10)      |          |
| Equipment Location   |                                | Wall mounted fan             |          |
| Served Area          |                                | STG Building/Operation Floor |          |
| Fan Manufacturer     |                                | GREENHECK                    |          |
| Motor Manufacturer   |                                | GREENHECK                    |          |
| Exhaust Air Fan      |                                |                              |          |
| Fan                  | Specification                  | Design                       | Measured |
|                      | Exhaust Air Flow Rate (CMH)    | 103700                       | N.A      |
|                      | Total static pressure (pa)     | 91.5                         | N.A      |
|                      | Fan Speed (RPM)                | 750                          | N.A      |
|                      | Fan Pulley size (mm)           | N.S                          | N.A      |
| Motor                | Specification                  | Design                       | Measured |
|                      | Power (Kw)                     |                              | 11       |
|                      | Power supply (Volt/Ph/Hz)      |                              | 400/3/50 |
|                      | Average current(L1/L2/L3)(Amp) | N.S                          | N.A      |
|                      | Motor Speed (RPM)              | 750                          | N.A      |
|                      | Motor Pulley size (mm)         | N.S                          | N.A      |
|                      | Motor Body Temperature         | N.S                          | N.A      |
|                      | dB)noise                       | N.S                          | N.A      |

## NOTES:

1- For Ex.AF 10 (Ex.AF-S-OP-10), measurements were not applicable due to an electrical problem.



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## 12.1.2. Test data sheet(s)

### GROUND FLOOR

Data sheet no: 12.1.2.1 Airflow rate measurement

| Supply Air Fan 01         |                     |                |                      |
|---------------------------|---------------------|----------------|----------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/ Design) |
|                           | Design value        | Measured value |                      |
| SAF 01 (SAF-S-GF-01)      | 107780              | 119040         | 110                  |
| Total air flow rate [CMH] | 107780              | 119040         |                      |

### NOTES:



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Data sheet no: 12.1.2.2 Airflow rate measurement

| Supply Air Fan 02         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 02 (SAF-S-GF-02)      | 107780                 | 118706.9       | 110                        |
| Total air flow rate [CMH] | 107780                 | 118706.9       |                            |

NOTES:



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Data sheet no: 12.1.2.3 Airflow rate measurement

| Supply Air Fan 03         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 03 (SAF-S-GF-03)      | 107780                 | 118998         | 110                        |
| Total air flow rate [CMH] | 107780                 | 118998         |                            |

NOTES:



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Data sheet no: 12.1.2.4 Airflow rate measurement

| Supply Air Fan 04         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 04 (SAF-S-GF-04)      | 107780                 | N.A            | -                          |
| Total air flow rate [CMH] | 107780                 | N.A            | -                          |

## NOTES:

1-Air Flow Rate measurements were not applicable due to an electrical problem.



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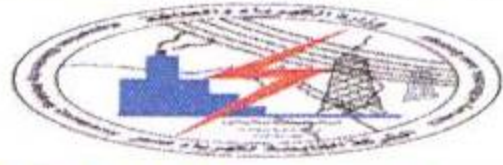
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Data sheet no: 12.1.2.5 Airflow rate measurement

| Supply Air Fan 05         |                     |                |                      |
|---------------------------|---------------------|----------------|----------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/ Design) |
|                           | Design value        | Measured value |                      |
| SAF 05(SAF-S-GF-05)       | 107780              | N.A            |                      |
| Total air flow rate [CMH] | 107780              | N.A            |                      |

NOTES:

1-Air Flow Rate measurements were not applicable due to an electrical problem.



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Data sheet no: 12.1.2.6 Airflow rate measurement

| Supply Air Fan o6         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF o6 (SAF-S-GF-o6)      | 107780                 | N.A            |                            |
| Total air flow rate [CMH] | 107780                 | N.A            |                            |

NOTES:

1-Air Flow Rate measurements were not applicable due to an electrical problem.



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Data sheet no: 12.1.2.7 Airflow rate measurement

| Supply Air Fan 07         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 07 (SAF-S-GF-07)      | 107780                 | 118706.9       | 110                        |
| Total air flow rate [CMH] | 107780                 | 118706.9       |                            |

NOTES:



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Data sheet no: 12.1.2.8 Airflow rate measurement

| Supply Air Fan o8         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF o8 (SAF-S-GF-o8)      | 107780                 | 115811.7       | 107                        |
| Total air flow rate [CMH] | 107780                 | 115811.7       |                            |

NOTES:



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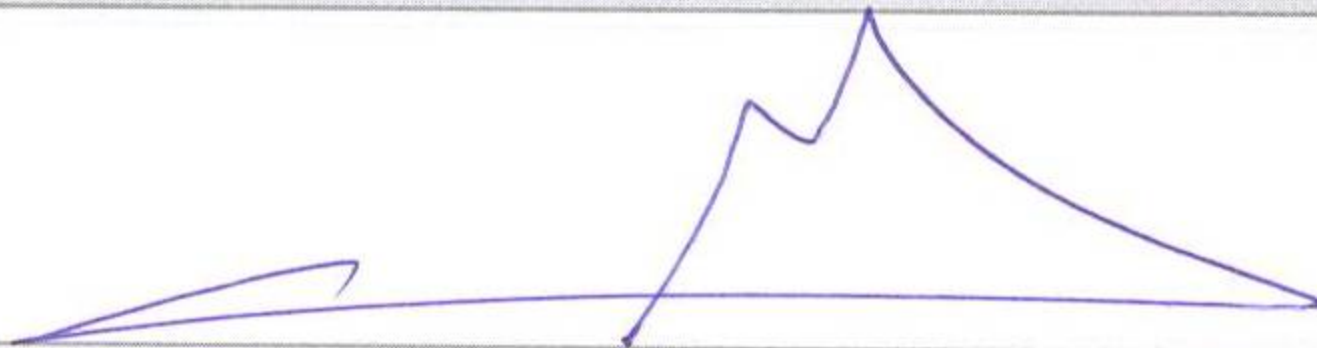
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Data sheet no: 12.1.2.9 Airflow rate measurement

| Exhaust Air Fan 01        |                     |                |                     |
|---------------------------|---------------------|----------------|---------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/Design) |
|                           | Design value        | Measured value |                     |
| Ex.AF 01 (Ex.AF-S-GF-01)  | 107780              | 111468         | 103                 |
| Total air flow rate [CMH] | 107780              | 111468         |                     |

NOTES:



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Data sheet no: 12.1.2.10 Airflow rate measurement

| Exhaust Air Fan 02        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 02 (Ex.AF-S-GF-02)  | 107780                 | 107125         | 99                         |
| Total air flow rate [CMH] | 107780                 | 107125         |                            |

NOTES:



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Data sheet no: 12.1.2.11 Airflow rate measurement

| Exhaust Air Fan 03        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 03 (Ex.AF-S-GF-03)  | 107780                 | 110021         | 102                        |
| Total air flow rate [CMH] | 107780                 | 110021         |                            |

NOTES:



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Data sheet no: 12.1.2.12 Airflow rate measurement

| Exhaust Air Fan 04        |                     |                |                     |
|---------------------------|---------------------|----------------|---------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/Design) |
|                           | Design value        | Measured value |                     |
| Ex.AF 04 (Ex.AF-S-GF-04)  | 107780              | 111468         | 103                 |
| Total air flow rate [CMH] | 107780              | 111468         |                     |

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Data sheet no: 12.1.2.13 Airflow rate measurement

| Exhaust Air Fan 05        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 05 (Ex.AF-S-GF-05)  | 107780                 | 117259         | 109                        |
| Total air flow rate [CMH] | 107780                 | 117259         |                            |

NOTES:



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Data sheet no: 12.1.2.14 Airflow rate measurement

| Exhaust Air Fan o6        |                     |                |                      |
|---------------------------|---------------------|----------------|----------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/ Design) |
|                           | Design value        | Measured value |                      |
| Ex.AF o6 (Ex.AF-S-GF-o6)  | 107780              | 100128         | 93                   |
| Total air flow rate [CMH] | 107780              | 100128         |                      |

NOTES:



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Data sheet no: 12.1.2.15 Airflow rate measurement

| Exhaust Air Fan 07        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 07 (Ex.AF-S-GF-07)  | 107780                 | 104230         | 97                         |
| Total air flow rate [CMH] | 107780                 | 104230         |                            |

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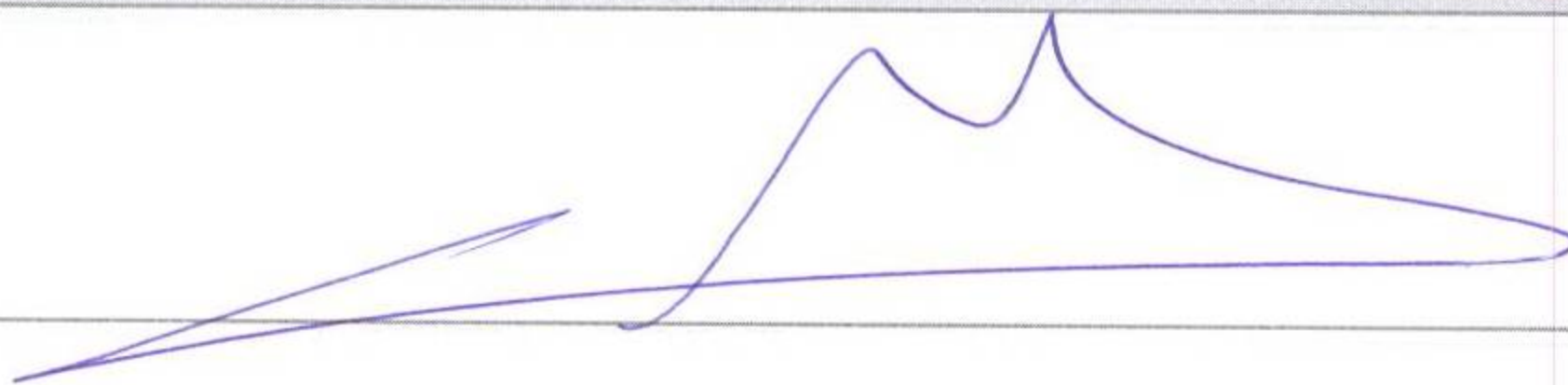
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Data sheet no: 12.1.2.16 Airflow rate measurement

| Exhaust Air Fan o8        |                     |                |                      |
|---------------------------|---------------------|----------------|----------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/ Design) |
|                           | Design value        | Measured value |                      |
| Ex.AF o8 (Ex.AF-S-GF-o8)  | 107780              | 107125         | 99                   |
| Total air flow rate [CMH] | 107780              | 107125         |                      |

NOTES:



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## MEZZANINE FLOOR

Data sheet no: 12.1.2.17 Airflow rate measurement

| Supply Air Fan 01         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 01(SAF-S-MF-01)       | 96900                  | 106788         | 110                        |
| Total air flow rate [CMH] | 96900                  | 106788         |                            |

NOTES:



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Data sheet no: 12.1.2.18 Airflow rate measurement

| Supply Air Fan 02         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 02(SAF-S-MF-02)       | 96900                  | 106898         | 110                        |
| Total air flow rate [CMH] | 96900                  | 106898         |                            |

NOTES:

*[Handwritten signature]*



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Data sheet no: 12.1.2.19 Airflow rate measurement

| Supply Air Fan 03         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 03(SAF-S-MF-03)       | 96900                  | N.A            | N.A                        |
| Total air flow rate [CMH] | 96900                  |                |                            |

## NOTES:

1-Air Flow Rate measurements were not applicable due to an electrical problem.



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Data sheet no: 12.1.2.20 Airflow rate measurement

| Supply Air Fan 04         |                     |                |                     |
|---------------------------|---------------------|----------------|---------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/Design) |
|                           | Design value        | Measured value |                     |
| SAF 04(SAF-S-MF-04)       | 96900               | 106998         | 110                 |
| Total air flow rate [CMH] | 96900               | 106998         |                     |

NOTES:



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Data sheet no: 12.1.2.21 Airflow rate measurement

| Supply Air Fan 05         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 05(SAF-S-MF-05)       | 96900                  | 105678         | 109                        |
| Total air flow rate [CMH] | 96900                  | 105678         |                            |

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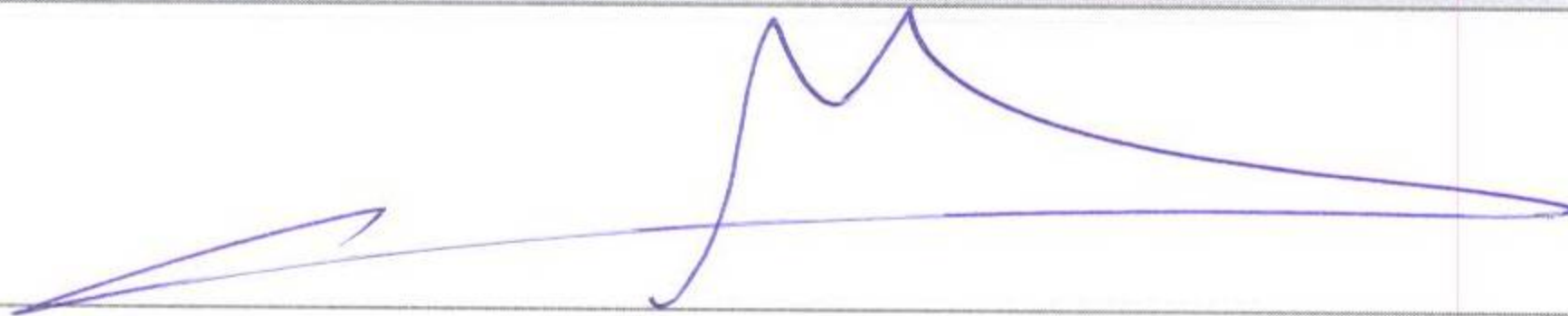
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Data sheet no: 12.1.2.22 Airflow rate measurement

| Supply Air Fan o6         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF o6(SAF-S-MF-o6)       | 96900                  | 96850          | 100                        |
| Total air flow rate [CMH] | 96900                  | 96850          |                            |

NOTES:



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Data sheet no: 12.1.2.23 Airflow rate measurement

| Supply Air Fan 07         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 07(SAF-S-MF-07)       | 96900                  | 96000          | 99                         |
| Total air flow rate [CMH] | 96900                  | 96000          |                            |

NOTES:



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Data sheet no: 12.1.2.24 Airflow rate measurement

| Exhaust Air Fan 01        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 01 (Ex.AF-S-MF-01)  | 96900                  | 94096          | 97                         |
| Total air flow rate [CMH] | 96900                  | 94096          |                            |

NOTES:



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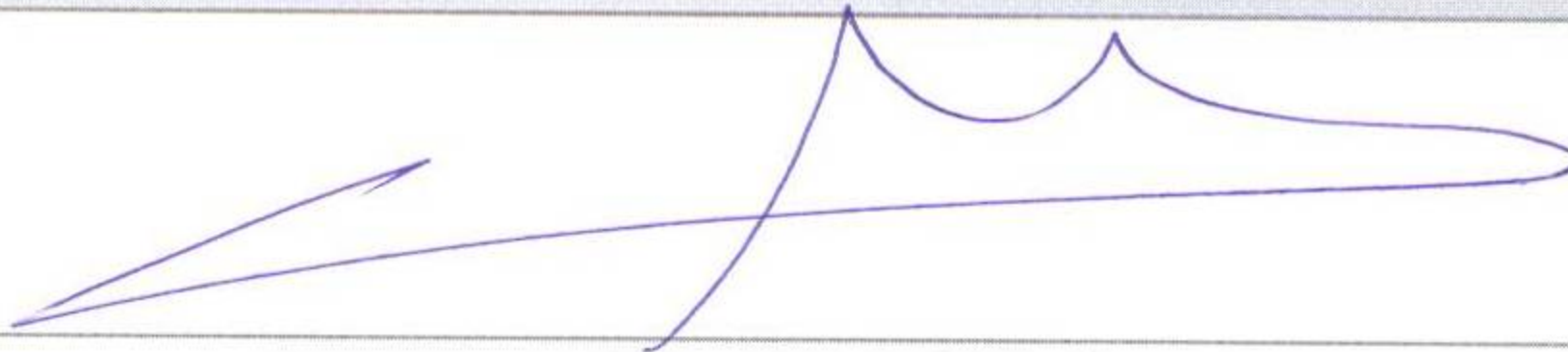
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Data sheet no: 12.1.2.25 Airflow rate measurement

| Exhaust Air Fan 02        |                        |                |     |
|---------------------------|------------------------|----------------|-----|
| Fan                       | air flow rate<br>[CMH] |                | %   |
|                           | Design value           | Measured value |     |
| Ex.AF 02 (Ex.AF-S-MF-02)  | 96900                  | 102782         | 106 |
| Total air flow rate [CMH] | 96900                  | 102782         |     |

NOTES:



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Data sheet no: 12.1.2.26 Airflow rate measurement

| Exhaust Air Fan 03        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 03 (Ex.AF-S-MF-03)  | 96900                  | 104230         | 108                        |
| Total air flow rate [CMH] | 96900                  | 104230         |                            |

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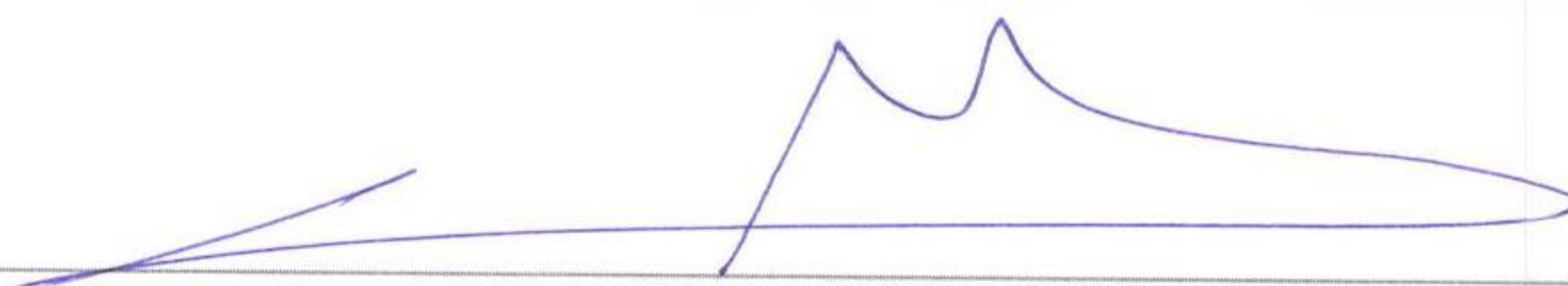
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Data sheet no: 12.1.2.27 Airflow rate measurement

| Exhaust Air Fan 04        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 04(Ex.AF-S-MF-04)   | 96900                  | 106830         | 110                        |
| Total air flow rate [CMH] | 96900                  | 106830         |                            |

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Data sheet no: 12.1.2.28 Airflow rate measurement

| Exhaust Air Fan 05        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 05 (Ex.AF-S-MF-05)  | 107780                 | 99887          | 103                        |
| Total air flow rate [CMH] | 107780                 | 99887          |                            |

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Data sheet no: 12.1.2.29 Airflow rate measurement

| Exhaust Air Fan o6        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF o6 (Ex.AF-S-MF-o6)  | 96900                  | 106980         | 110                        |
| Total air flow rate [CMH] | 96900                  | 106980         |                            |

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Data sheet no: 12.1.2.30 Airflow rate measurement

| Exhaust Air Fan 07        |                     |                |                            |
|---------------------------|---------------------|----------------|----------------------------|
| Fan                       | air flow rate [CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value        | Measured value |                            |
| Ex.AF 07 (Ex.AF-S-MF-07)  | 96900               | 98730          | 102                        |
| Total air flow rate [CMH] | 96900               | 98730          |                            |

NOTES:

*[Handwritten signature]*



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Signature *[Signature]*  
Date 13/03/2018

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## OPERATION FLOOR

Data sheet no: 12.1.2.31 Airflow rate measurement

| Supply Air Fan 01         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 01 (SAF-S-OP-01)      | 103700                 | 114250         | 110                        |
| Total air flow rate [CMH] | 103700                 | 114250         |                            |

### NOTES:



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Data sheet no: 12.1.2.32 Airflow rate measurement

| Supply Air Fan 02         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 02 (SAF-S-OP-02)      | 103700                 | 113820         | 110                        |
| Total air flow rate [CMH] | 103700                 | 113820         |                            |

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Data sheet no: 12.1.2.33 Airflow rate measurement

| Supply Air Fan 03         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 03 (SAF-S-OP-03)      | 103700                 | 114110         | 110                        |
| Total air flow rate [CMH] | 103700                 | 114110         |                            |

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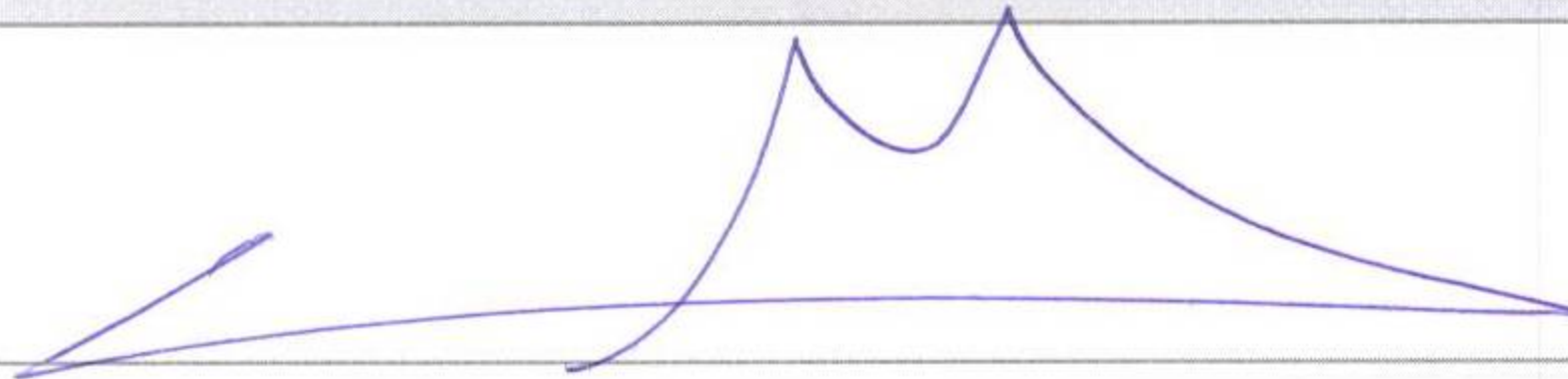
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Data sheet no: 12.1.2.34 Airflow rate measurement

| Supply Air Fan 04         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 04 (SAF-S-OP-04)      | 103700                 | 113890         | 110                        |
| Total air flow rate [CMH] | 103700                 | 113890         |                            |

NOTES:



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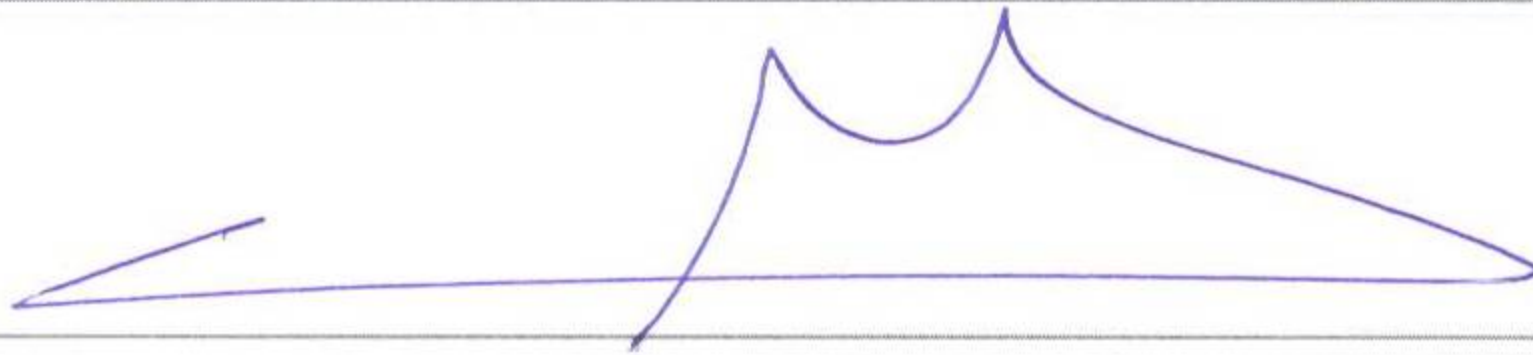
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Data sheet no: 12.1.2.35 Airflow rate measurement

| Supply Air Fan 05         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 05 (SAF-S-OP-05)      | 103700                 | 112916         | 109                        |
| Total air flow rate [CMH] | 103700                 | 112916         |                            |

NOTES:



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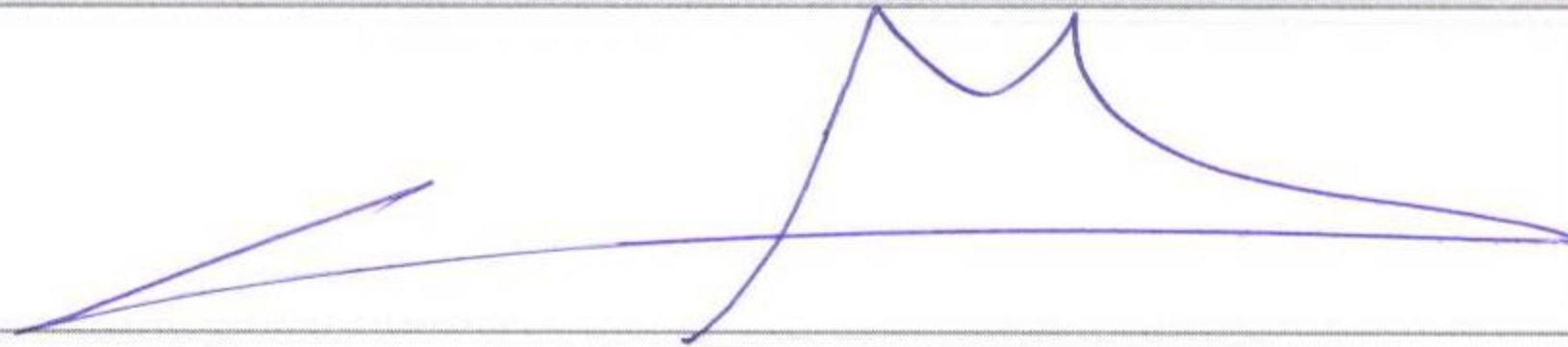
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Data sheet no: 12.1.2.36 Airflow rate measurement

| Supply Air Fan o6         |                     |                |                     |
|---------------------------|---------------------|----------------|---------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/Design) |
|                           | Design value        | Measured value |                     |
| SAF o6 (SAF-S-OP-o6)      | 103700              | 114305         | 110                 |
| Total air flow rate [CMH] | 103700              | 114305         |                     |

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Data sheet no: 12.1.2.37 Airflow rate measurement

| Supply Air Fan 07         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 07 (SAF-S-OP-07)      | 103700                 | 114255         | 110                        |
| Total air flow rate [CMH] | 103700                 | 114255         |                            |

NOTES:



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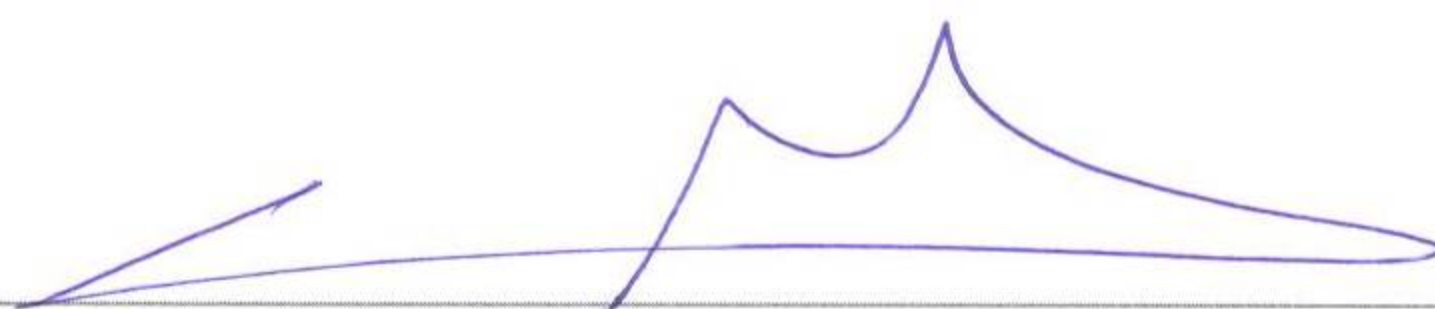
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Data sheet no: 12.1.2.38 Airflow rate measurement

| Supply Air Fan o8         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF o8 (SAF-S-OP-o8)      | 103700                 | 114364         | 110                        |
| Total air flow rate [CMH] | 103700                 | 114364         |                            |

NOTES:



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Data sheet no: 12.1.2.39 Airflow rate measurement

| Supply Air Fan 09         |                     |                |                     |
|---------------------------|---------------------|----------------|---------------------|
| Fan                       | air flow rate [CMH] |                | % (Measured/Design) |
|                           | Design value        | Measured value |                     |
| SAF 09 (SAF-S-OP-09)      | 103700              | 114995         | 111                 |
| Total air flow rate [CMH] | 103700              | 114995         |                     |

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Data sheet no: 12.1.2.40 Airflow rate measurement

| Supply Air Fan 10         |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| SAF 10 (SAF-S-OP-10)      | 103700                 | 114988         | 111                        |
| Total air flow rate [CMH] | 103700                 | 114988         |                            |

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Data sheet no: 12.1.2.41 Airflow rate measurement

| Exhaust Air Fan 01        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 01 (Ex.AF-S-OP-01)  | 103700                 | 106676.7       | 103                        |
| Total air flow rate [CMH] | 103700                 | 106676.7       |                            |

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Data sheet no: 12.1.2.42 Airflow rate measurement

| Exhaust Air Fan 02        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 02 (Ex.AF-S-OP-02)  | 103700                 | 108461.7       | 105                        |
| Total air flow rate [CMH] | 103700                 | 108461.7       |                            |

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Data sheet no: 12.1.2.43 Airflow rate measurement

| Exhaust Air Fan 03        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 03 (Ex.AF-S-OP-03)  | 103700                 | 108953         | 105                        |
| Total air flow rate [CMH] | 103700                 | 108953         |                            |

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Data sheet no: 12.1.2.44 Airflow rate measurement

| Exhaust Air Fan 04        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 04 (Ex.AF-S-OP-04)  | 103700                 | 108460         | 105                        |
| Total air flow rate [CMH] | 103700                 | 108460         |                            |

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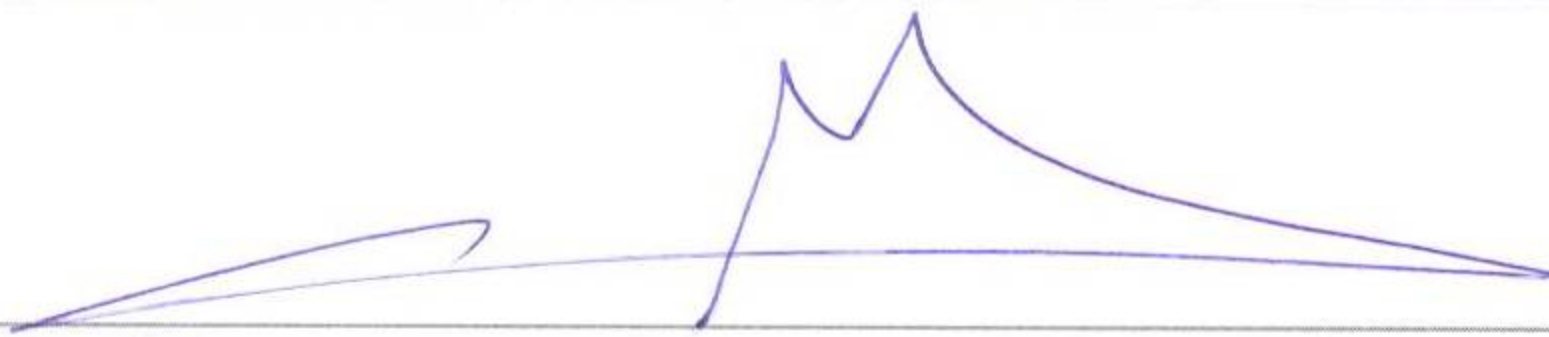
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Data sheet no: 12.1.2.45 Airflow rate measurement

| Exhaust Air Fan 05        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 05 (Ex.AF-S-OP-05)  | 103700                 | 108885         | 105                        |
| Total air flow rate [CMH] | 103700                 | 108885         |                            |

NOTES:



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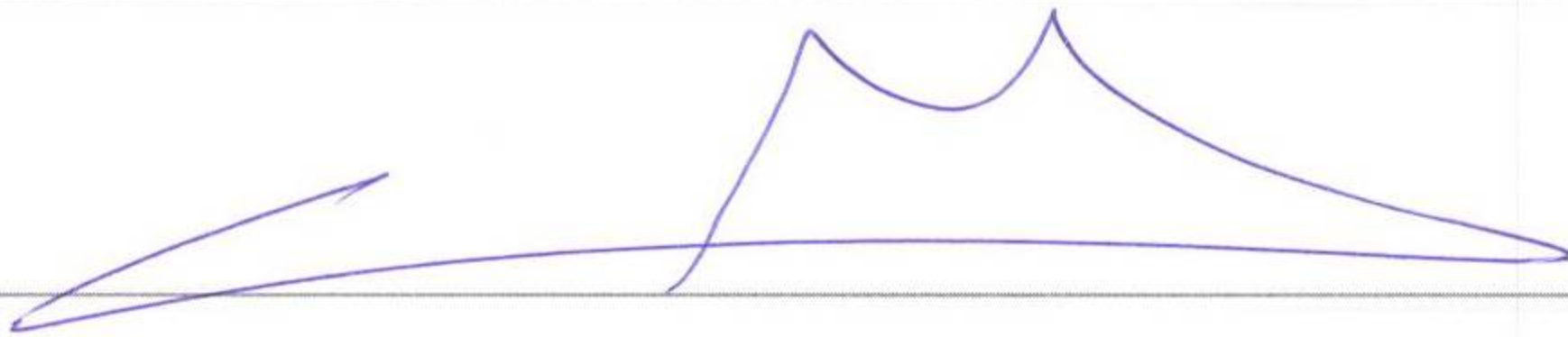
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Data sheet no: 12.1.2.46 Airflow rate measurement

| Exhaust Air Fan o6        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF o6 (Ex.AF-S-OP-o6)  | 103700                 | 111350         | 107                        |
| Total air flow rate [CMH] | 103700                 | 111350         |                            |

## NOTES:



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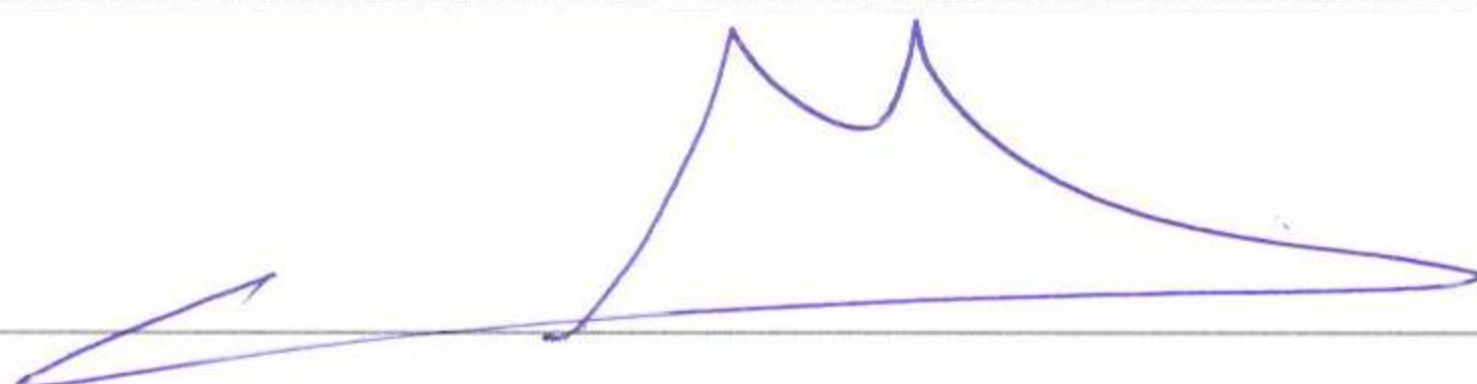
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Data sheet no: 12.1.2.47 Airflow rate measurement

| Exhaust Air Fan 07        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 07 (Ex.AF-S-OP-07)  | 103700                 | 110297.7       | 106                        |
| Total air flow rate [CMH] | 103700                 | 110297.7       |                            |

NOTES:



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Data sheet no: 12.1.2.48 Airflow rate measurement

| Exhaust Air Fan o8        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF o8 (Ex.AF-S-OP-o8)  | 103700                 | N.A            |                            |
| Total air flow rate [CMH] | 103700                 | N.A            |                            |

## NOTES:

1-Air Flow Rate measurements were not applicable due to an electrical problem.



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Data sheet no: 12.1.2.49 Airflow rate measurement

| Exhaust Air Fan 09        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 09 (Ex.AF-S-OP-09)  | 103700                 | N.A            |                            |
| Total air flow rate [CMH] | 103700                 | N.A            |                            |

## NOTES:

1-Air Flow Rate measurements were not applicable due to an electrical problem.



Tested By

Name

Marwan Samy

Signature

Date

12/03/2018

Reviewed By

Al-Hassan ahmed

16/03/2018





STG Building-Turbine (1)

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Data sheet no: 12.1.2.50 Airflow rate measurement

| Exhaust Air Fan 10        |                        |                |                            |
|---------------------------|------------------------|----------------|----------------------------|
| Fan                       | air flow rate<br>[CMH] |                | %<br>(Measured/<br>Design) |
|                           | Design value           | Measured value |                            |
| Ex.AF 10 (Ex.AF-S-OP-10)  | 103700                 | N.A            | -                          |
| Total air flow rate [CMH] | 103700                 | N.A            | -                          |

## NOTES:

1-Air Flow Rate measurements were not applicable due to an electrical problem.



Tested By

Name

Marwan Samy

Signature

Date

12/03/2018

Reviewed By

Al-Hassan ahmed

16/03/2018



|                                                                                                                      |              |                                                               |               |                                                                                     |
|----------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| <br><b>STG Building-Turbine (1)</b> |              | <b>HVAC<br/>TESTING, ADJUSTING &amp; BALANCING<br/>REPORT</b> |               |  |
| Mar., 2018                                                                                                           | Rev. No.: 01 | Doc. No.: TAB-02318                                           | F-7.2.0-12/01 | Page 164 of 169                                                                     |

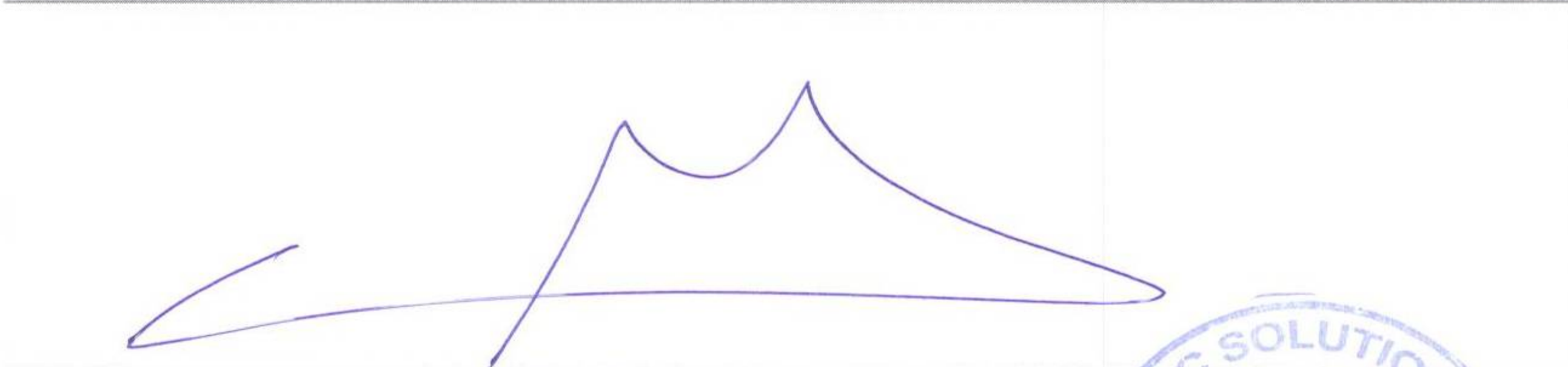
### 13. List of Instruments Calibration Sheet

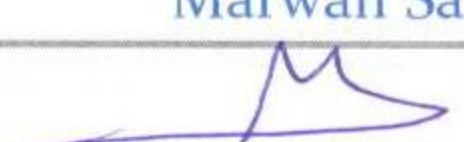
Copy 1 of 1

Data sheet number 13.1

| INSTRUMENT             |                         |               | CALIBRATION         |            |
|------------------------|-------------------------|---------------|---------------------|------------|
| Description            | Manufacturing/<br>Model | Serial number | Calibration<br>date | Due date   |
| Digital diff. pressure | KIMO/MP200              | 12078832      | 09/07/2017          | 08/07/2018 |
| Sound Level Meter      | CEM-DT 85C              | 12033945      | 9/10/2017           | 9/10/2018  |
| Anemometer (Van)       | KIMO/LCA301             | 0262532       | 23/11/2017          | 23/11/2018 |
| Digital Clamp meter    | UNI-T/UT202A            | H150747469    | 22/11/2017          | 22/11/2018 |

#### NOTES:



|                  |                                                                                     |                    |                                                                                       |
|------------------|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|
| <b>Tested By</b> |                                                                                     | <b>Reviewed By</b> |                                                                                       |
| Name             | Marwan Samy                                                                         | Name               | Al-Hassan Ahmed                                                                       |
| Signature        |  | Signature          |  |
| Date             | 22/04/2018                                                                          | Date               | 26/04/2018                                                                            |





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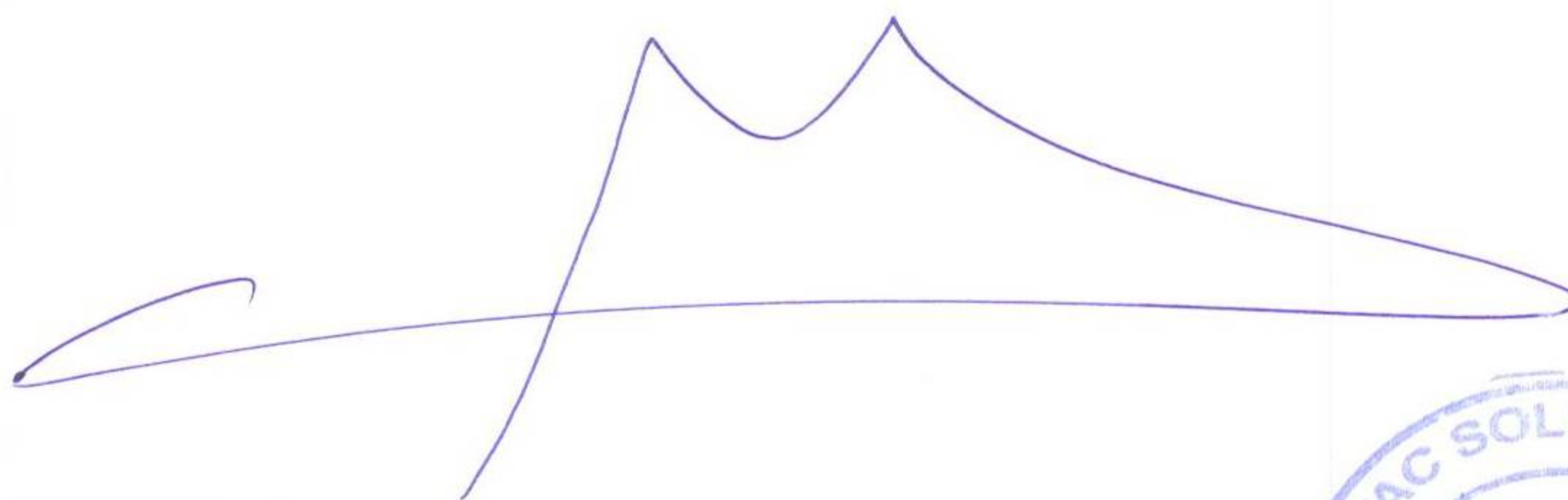
## 14 LIST OF ATTACHMENT

Copy 1 of 1

Data sheet number 14.1

| Attachment<br>N° | Description                                       | Test Report<br>N° | Location |
|------------------|---------------------------------------------------|-------------------|----------|
| 01               | Digital diff. pressure Calibration<br>Certificate | 13.1              | Attached |
| 02               | Sound Level Meter Calibration Certificate         | 13.1              | Attached |
| 03               | Anemometer (Van) Calibration Certificate          | 13.1              | Attached |
| 04               | Digital Clamp meter Calibration<br>Certificate    | 13.1              | Attached |

### NOTES:



**Tested By**

Name

Marwan Samy

Signature

Date

22/04/2018

**Reviewed By**

Al-Hassan Ahmed

26/04/2018





STG Building-Turbine (1)

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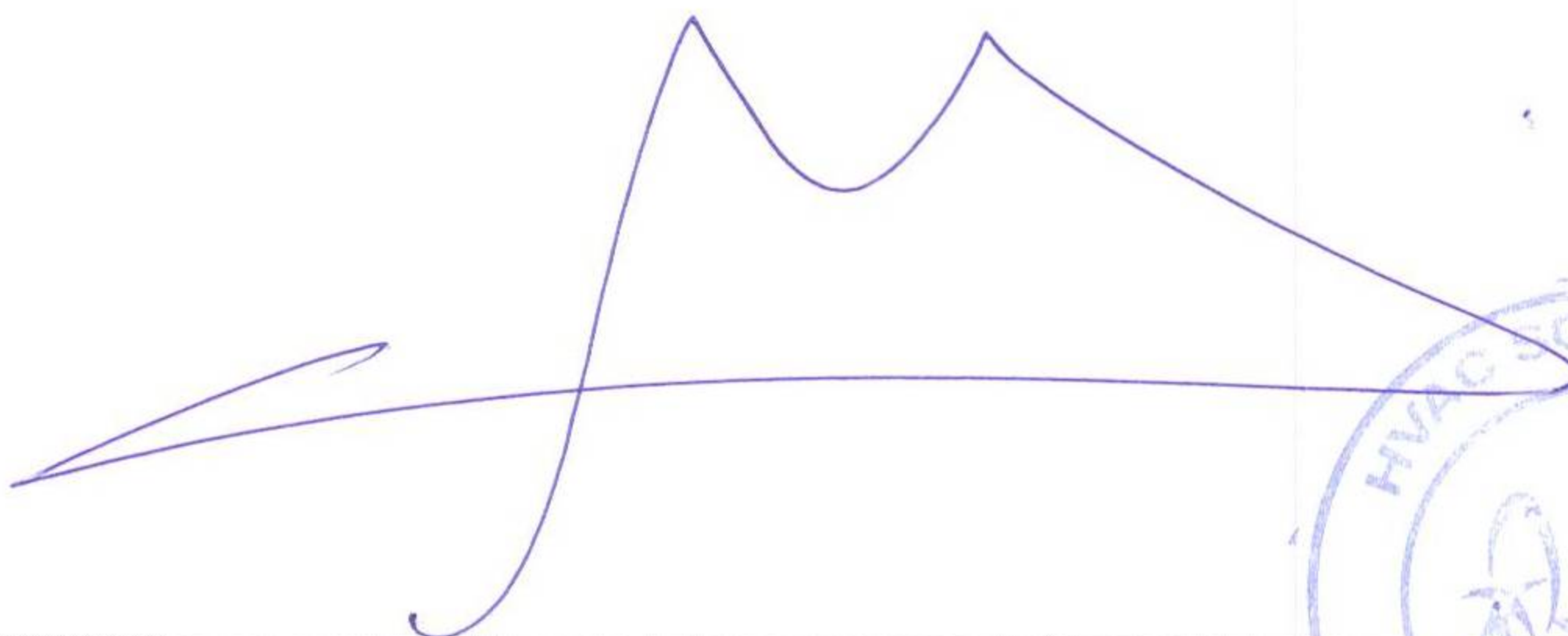
## 15 PERSONNEL IDENTIFICATION

Copy 1 of 1

Data sheet number 15.1.

| Name                 | Title | Department/Company | Signature | Date       |
|----------------------|-------|--------------------|-----------|------------|
| Nourhane Alaa ElDein | T.O.E | T&B/TAG            |           | 10/03/2018 |
| Marwan Samy          | P.E   | T&B/TAG            |           | 22/04/2018 |
| Al-Hassan ahmed      | S.H   | T&B/TAG            |           | 26/04/2018 |
|                      |       |                    |           |            |
|                      |       |                    |           |            |
|                      |       |                    |           |            |
|                      |       |                    |           |            |

### NOTES:




Tested By

Reviewed By

Name

Marwan Samy

Al-Hassan Ahmed

Signature

Date

22/04/2018

26/04/2018



|                                                                                                                      |              |                                                               |               |                                                                                     |
|----------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| <br><b>STG Building-Turbine (1)</b> |              | <b>HVAC<br/>TESTING, ADJUSTING &amp; BALANCING<br/>REPORT</b> |               |  |
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## 16 DEVIATION REPORT

Copy 1 of 1

|                                                             |  |                       |  |
|-------------------------------------------------------------|--|-----------------------|--|
| Test Report (N°. and description):                          |  | Deviation N :         |  |
| Description:                                                |  |                       |  |
| Signature TAG:                                              |  | Date:                 |  |
| Signature <b>South Helwan Supercritical Power Plant</b>     |  | Date:                 |  |
| Corrective action:                                          |  |                       |  |
| Person in charge to close the deviation                     |  | Expected closure date |  |
| Signature TAG:                                              |  | Date:                 |  |
| Signature QA <b>South Helwan Supercritical Power Plants</b> |  | Date:                 |  |
| Corrective Action results                                   |  |                       |  |
| Signature TAG:                                              |  | Date:                 |  |
| Signature: <b>South Helwan Supercritical Power Plant</b>    |  | Date:                 |  |
| Deviation successfully solved?                              |  | YES _____ NO _____    |  |
| Signature:                                                  |  | Date:                 |  |
| Signature:                                                  |  | Date:                 |  |







STG Building-Turbine (1)

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### 17 CHANGE CONTROL REPORT

Copy \_\_\_ of \_\_\_

Test Report (N°. and description):

Date of Request:

Change Request Initiator (name, location, phone):

Description of Change:

Reason for Change:

How does the proposed change affect the safety/vulnerabilities? (Safety, Health, and Environmental Considerations):

Resulting Changes (to existing O&M procedures, inspection and testing procedures, process/facility documents/drawings, safety plans, training requirements, etc.):



Project Manager Approval:

Date:

Facility Operations Manager Approval:

Date:





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## 18 FINAL REVIEW AND APPROVAL (AFTER EXECUTION)

The review of the test execution and the relevant raw data allow concluding that the Testing, Adjusting & Balancing Report has been concluded:

POSITIVE



PASS WITH DEVIATION



NEGATIVE



### NOTES:

Notes section with horizontal lines and a diagonal line crossing through them.

Approved by \_\_\_\_\_ Signature \_\_\_\_\_ S.H Title TAG Company 26/04/2018 Date

Approved by \_\_\_\_\_ Signature \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_ Date \_\_\_\_\_

Approved by \_\_\_\_\_ Signature \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_ Date \_\_\_\_\_

Approved by \_\_\_\_\_ Signature \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_ Date \_\_\_\_\_

Approved by \_\_\_\_\_ Signature \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_ Date \_\_\_\_\_

